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**Proceedings of the American Academy of Arts and Sciences**

VOL. 74, No. 14, P. 441-488—NOVEMBER, 1942

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RECORDS OF MEETINGS, 1940-1941, 1941-1942

PRESIDENTS OF THE ACADEMY

OFFICERS AND COMMITTEES FOR 1942-1943

LIST OF THE FELLOWS AND FOREIGN HONORARY MEMBERS

STATUTES AND STANDING VOTES

RUMFORD PREMIUM

PERMANENT SCIENCE FUND

(Continued from page three of cover)

VOLUME 74

1. BRIDGMAN, P. W.—The Measurement of Hydrostatic Pressure to 30,000 kg/cm<sup>2</sup>. pp. 1-10. October, 1940. \$0.35.
2. BRIDGMAN, P. W.—The Linear Compression of Iron to 30,000 kg/cm<sup>2</sup>. pp. 11-20. October, 1940. \$0.35.
3. BRIDGMAN, P. W.—The Compression of 46 Substances to 50,000 kg/cm<sup>2</sup>. pp. 21-51. October, 1940. \$1.00.
4. BARTLETT, J. H. AND WATSON, R. E.—The Elastic Scattering of Fast Electrons by Heavy Elements. pp. 53-68. October, 1940. \$0.65.
5. BRUES, CHARLES T.—Fossil Parasitic Hymenoptera of the Family Scelionidae from Baltic Amber. pp. 69-90. October, 1940. \$0.75.
6. RECORDS OF MEETINGS; Biographical Notices; Presidents of the Academy; Officers and Committees; List of Fellows and Foreign Honorary Members, etc.; pp. 91-192. November, 1940. \$2.00.
7. CARPENTER, F. M.—A Revision of the Nearctic Hemerobiidae, Berothidae, Sisyridae, Polystoechotidae and Dilaridae (Neuroptera). pp. 193-278. December, 1940. \$2.25.
8. BRUES, CHARLES T.—Photographic Evidence on the Visibility of Color Patterns in Butterflies to the Human and Insect Eye. pp. 281-285. October, 1941. \$0.35.
9. HILDEBRAND, FRANCIS B.—The Approximate Solution of Singular Integral Equations Arising in Engineering Practice. pp. 287-295. November, 1941. \$0.85.
10. DAVIS, TENNEY L. AND KUO-FU, CH'EN.—The Inner Chapters of Pao-P'u-Tzŭ. pp. 297-325. December, 1941. \$1.00.
11. BEATTIE, JAMES A., JACOBUS, DAVID D., GAINES, JOHN M., JR., BENEDICT, MANSON, BLAISDELL, B. EDWIN, KAYE, JOSEPH, GERRY, HAROLD T., AND JOHNSON, CLARENCE A.—An Experimental Study of the Absolute Temperature Scale. pp. 327-397. December, 1941. \$2.00.
12. BRIDGMAN, P. W.—Freezing Parameters and Compressions of Twenty-One Substances to 50,000 kg/cm<sup>2</sup>. pp. 399-424. April, 1942. \$0.60.
13. BRIDGMAN, P. W.—Pressure-Volume Relations for Seventeen Elements to 100,000 kg/cm<sup>2</sup>. pp. 425-440. April, 1942. \$0.85.
14. RECORDS OF MEETINGS; Presidents of the Academy; Officers and Committees; List of Fellows and Foreign Honorary Members, etc.; pp. 441-488. November, 1942. \$2.00.







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## RECORDS OF MEETINGS

### One Thousand Two Hundred and Sixty-Fourth Meeting

OCTOBER 9, 1940.—STATED MEETING

The Academy met at its House at 8.20 P. M.  
The President in the Chair.

There were present forty-nine Fellows and forty-six guests.

The records of the meeting of May 8 were read and approved.

The Corresponding Secretary reported the receipt of letters accepting Fellowship from Robert Granville Caldwell, Serge Elisséeff, William Lloyd Evans, Lon Louvois Fuller, Harold Locke Hazen, Frederick Vinton Hunt, Werner Wilhelm Jaeger, Henry Tilton Lummus, William de Berniere MacNider, Paul Christoph Mangelsdorf, J. Robert Oppenheimer, Edgar Howard Sturtevant, Donald Dexter Van Slyke, Paul Dudley White, and John Wulff; letters accepting Foreign Honorary Membership from Fernand Baldensperger, Paul Hindemith, Martin Persson Nilsson, and Igor Stravinsky; also of letters declining Fellowship from Henry Bruere, Lloyd Kirkham Garrison, Alvin Saunders Johnson, and Archibald MacLeish.

He also announced that the Council had made the following grants from the income of the Permanent Science Fund.

1. To Lloyd R. Watson, Professor of Chemistry, Alfred University, Alfred, N. Y., for expendable materials and for assistance in a continuation of his study of eye colors of mutant bees, \$450.

2. To Edward H. Kemp, Assistant Professor of Psychology, Duke University, for rebuilding an amplifier system to be used in recording impulses from single fibers of the eighth nerve, \$250.

3. To Dr. Daniel Abramson, Assistant in Obstetrics, Boston Lying-In Hospital, for chemicals, animals and other expendable materials to be used in a study of the effect of "Relaxin" on smooth muscle, \$300.

4. To Lyman G. Parratt, Assistant Professor, Cornell University, for equipment and construction of high voltage apparatus for a continuing study of the outer energy levels of solid materials, \$325, contingent upon receipt by the recipient of

a similar sum from the Rumford Committee or elsewhere.

To Charles W. Turner, Professor of Dairy Husbandry, University of Missouri, for the purchase of experimental animals and feed for a study of the relation of thyroid gland to the fat, carbohydrate and protein metabolism hormones of the anterior pituitary, \$500.

6. To George E. Valley, Jr., National Research Fellow, Harvard University, for machine work, metal stock, materials and specimens required in his study of the energy and relative intensity of gamma rays from certain atomic nuclei, \$450.

7. To Donald H. Menzel, Professor of Astrophysics, Harvard University, for the purchase of quartz plates and other materials to construct filters for isolating narrow bands of light to be used in astronomical studies, \$450.

8. To Alfred C. Lane, Professor Emeritus of Geology, Tufts College, to supply certain materials and assistance to Professor Wahl, of Helsinki, Finland, as a part of the program of the Committee on the Measurement of Geological Time of the National Research Council, \$250, provided that means can be found to forward materials and funds to the above destination.

9. To Alvin L. Moxon, Experiment Station Chemist, South Dakota College, Brookings, for materials and animals to be used in his investigation of the antagonism between arsenic and selenium as it relates to selenium poisoning of livestock, \$300.

10. To Martin D. Whitaker, Instructor of Physics, New York University, a final grant for the rental of a radium beryllium source to continue his investigation in slow neutron scattering, which was supported from this fund in the calendar year just completed, \$500, contingent upon the applicant's ability to secure \$350 from some other source.

11. To Hugh M. Huffman, Assistant Professor of Biochemistry, California Institute of Technology, for construction of a semimicro bomb to be used in his continuing studies of the application of thermodynamics to physiological processes,

\$400, contingent upon his assurance that funds will be available for the remainder of the cost of the problem outlined by him.

12. To James A. Beattie, Professor of Physical Chemistry, Massachusetts Institute of Technology, a final grant for materials and construction of a cryostat to cover the temperature range  $0^{\circ}$  to  $-270^{\circ}$  C. to be used in the absolute temperature scale from  $-270^{\circ}$  to  $-450^{\circ}$  C., \$500.

The President then described an expedition undertaken by the Academy and Harvard University in 1780 to observe a total eclipse of the sun from an island in Penobscot Bay, at which time Bailey's beads were first described. He said that the marker on the site needs restoration and that the matter may be referred to the Council of the Academy.

The following communication was presented:

Tenney L. Davis: "The Identity of Chinese and European Alchemical Theory," illustrated with lantern slides.

Dr. J. J. Livingood, of Harvard University, then described the exhibits of the transmutation of the elements, which were on display in the library office.

Two papers were read by title: "Four Hundred Word Chin Tan of Chang Po-Tuan," by Tenney L. Davis and Chao Yün-ts'ung; and "The Scattering of Fast Electrons by Heavy Elements," by J. H. Bartlett and R. E. Watson, presented by E. C. Kemble.

The meeting was dissolved at ten o'clock.

#### One Thousand Two Hundred and Sixty-Fifth Meeting

NOVEMBER 13, 1940—STATED MEETING

The Academy met at its House at 8.20 P. M. The President in the Chair.

This having been designated as Ladies' Night, there were present 168 Fellows and guests.

The records of the meeting of October 9 were read and approved.

The Corresponding Secretary reported the receipt of letters accepting Fellowship from Albert Francis Blakeslee and Thomas Head Thomas; and of letters resigning Fellowship from William James and Frederick Albert Saunders.

The following communication was presented:

Edward L. Thorndike: "The Production, Retention and Attraction of Superior Men."

After the meeting Dr. Gregory Pincus, of

Clark University, made a demonstration of the physiology of mammalian eggs, exhibiting charts and microphotographs illustrating the development of rabbit ova. Included with the demonstration were microscope exhibits of living rabbit eggs and live rabbits produced parthenogenetically.

The meeting was dissolved at 9.45 P. M.

#### One Thousand Two Hundred and Sixty-Sixth Meeting

DECEMBER 11, 1940—STATED MEETING

The Academy met at its House at 8.15 P. M.

The President in the Chair.

There were present forty-six Fellows and forty-five guests.

The records of the meeting of November 13 were read and approved.

The following communications were presented:

Fletcher G. Watson: "The Approaching Comet."

James G. Baker: "Trends in Astronomical Optics."

Donald H. Menzel: "Motions in the Solar Atmosphere."

One paper was read by title: "Photographic Evidence on the Visibility of Color Patterns in Butterflies to the Human and Insect Eye," by Charles T. Brues.

The meeting was dissolved at 9.50 P. M.

#### One Thousand Two Hundred and Sixty-Seventh Meeting

JANUARY 8, 1941—STATED MEETING

The Academy met at its House at 8.25 P. M.

The President in the Chair.

There were present fifty-seven Fellows and forty-four guests.

The records of the meeting of December 11 were read and approved.

The Corresponding Secretary reported the receipt of a letter from Philip Drinker resigning Fellowship.

The following communication was presented:

Thomas H. Thomas: "The Hitler War and Hemisphere Defense."

An exhibit of scale models of ships of the British navy, from the Francis Russell Hart Nautical Museum of the Massachusetts Institute of Technology, was then described by Professor James R. Jack.

The meeting was dissolved at 9.40 P. M.

**One Thousand Two Hundred and Sixty-Eighth Meeting**

FEBRUARY 12, 1941—STATED MEETING

The Academy met at its House at 8.15 P. M.  
Vice-President Wolbach in the Chair.

There were present forty-nine Fellows and thirty-seven guests.

The records of the meeting of January 8 were read and approved.

The following communication was presented:

Harold E. Edgerton: "Stroboscopic Light and its Applications," illustrated with motion pictures.

"An Experiment in Fifteenth Century Type-making," exhibited on the third floor, from the Dard Hunter Paper Museum of the Massachusetts Institute of Technology, was then described.

The meeting was dissolved at 9.40 P. M.

**One Thousand Two Hundred and Sixty-Ninth Meeting**

MARCH 12, 1941—STATED MEETING

The Academy met at its House at 8.30 P. M.  
The President in the Chair.

There were present thirty Fellows and thirty guests.

The records of the meeting of February 12 were read and approved.

The Corresponding Secretary announced that the Council had approved the recommendation of the Rumford Committee that the Rumford Premium be awarded to Vladimir K. Zworykin, of Camden, N. J.

He also announced that the Council had made the following grants from the Permanent Science Fund:

1. To Robert B. Dean, Junior Instructor, University of Minnesota, for the study of bi-molecular films, \$200.

2. To Dr. Nicholas T. Werthessen, Endocrine Laboratory, Boston Dispensary, for assistance in the study of ovarian disfunctions, \$720.

3. To Graham P. DuShane, Instructor in Zoology, University of Chicago, for assistance in the investigation of reflexes through isolated motor cells, \$400.

4. To Donald D. Brand, Professor of Anthropogeography, University of New Mexico, for materials and field expenses of an archeologic study of the occupation sequence in the middle

Rio Balsas area, Guerrero and Michoacan, Mexico, \$405.

5. To Charles B. Davenport, formerly of the Carnegie Institution, Cold Spring Harbor, N. Y., for assistance in completing the analysis of certain biometrical studies on children, \$200.

6. To Joseph S. Butts, Professor of Biochemistry, Oregon State College, for expendable materials and for assistance in continuing his study of the intermediary metabolism of amino acids, \$350.

7. To Paul A. Vestal, Research Curator, Botanical Museum, Harvard University, for expendable materials, assistance, and certain field expenses, in connection with an ethnologic study in the economic botany of the Ramah-Atarque Navaho Indians, \$300.

8. To George W. Kidder, Assistant Professor of Biology, Brown University, for assistance in studies of substances produced by living cells which accelerate or inhibit the proliferation of other cells, \$450.

9. To Barry Commoner, Tutor, Department of Biology, Queens College, Flushing, N. Y., for equipment to permit continuation of a biochemical investigation of the relation between auxin, respiratory mechanisms, and growth in plant cells, \$350.

10. To Vincent G. Dethier, Instructor in Biology, John Carroll University, Cleveland, Ohio, toward expenses of a study of the chemistry of food plants chosen by larvae of certain species of *Chrysophanus* in North America, \$200.

11. To Margaret Harwood, Director, Maria Mitchell Observatory, Nantucket, Mass., for assistance in a study of the form and motions of Eros, \$400.

12. To Frederick Johnson, Curator, Robert S. Peabody Foundation for Archaeology, Andover, Mass., toward the cost of publication of the data from collaborative studies upon the Boylston Street Fishweir, \$300.

13. To Philip M. Morse and Julius A. Stratton, Professor and Associate Professor of Physics, respectively, the Massachusetts Institute of Technology, for assistance in completing the calculation of tables of functions involved in the theory of wave radiation and scattering, \$450.

14. To Leigh Hoadley, Professor of Zoology, Harvard University, for assistance in the study



of nerve processes arising from isolated portions of the embryonic brain, and the differentiated tissues into which the processes lead, \$150.

On the recommendation of the Council the Academy voted the following appropriations for the year ending March 31, 1942:

From the income of the General Fund, \$7,000, to be used as follows:

for House expenses . . . . .	\$2,000
for General and Meeting expenses . . . . .	800
for Library expenses (salaries, periodicals, binding) . . . . .	3,200
for Treasurer's expenses . . . . .	900
for President's expenses . . . . .	100
	<hr/>
	\$7,000

From the income of the Publication Funds, \$2,350, to be used for publication.

From the income of the Rumford Fund, \$3,000, to be used at the discretion of the Committee.

From the income of the C. M. Warren Fund, \$1,000, to be used at the discretion of the Committee.

The President appointed the Nominating Committee, as follows:

- Otto Oldenberg, of Class I
- Roy G. Hoskins, of Class II
- Ralph E. Freeman, of Class III
- Ernest F. Langley, of Class IV

Dr. Viets reported the destruction by bombs of the library and collections of the Manchester (Eng.) Literary and Philosophical Society, and it was suggested that this Academy might be able to reproduce by microphotography some of the Society's publications from the files in the Academy's library.

The following communication was presented:

Sir Herbert Brown Ames, K. B.: "Canada's Major Contribution in the Present War."

Mr. Robert Gray, of the Dewey and Almy Chemical Company, Cambridge, then described an exhibit of balloons used in high altitude atmospheric exploration.

The meeting was dissolved at 10.15 P. M.

#### One Thousand Two Hundred and Seventieth Meeting

APRIL 9, 1941—STATED MEETING

The Academy met at its House at 8.15 P. M. Vice-President Pease in the Chair.

There were present thirty-five Fellows and twenty-six guests.

The records of the meeting of March 12 were read and approved.

The Corresponding Secretary reported the receipt of a letter from Cyrus E. Dallin resigning Fellowship.

The following communication was presented:

Kenneth J. Conant: "The Architectural Revolution: an Historical Background for the New Architecture in America."

Dr. Kenneth V. Thimann presented a demonstration concerned with the control of growth in plants by hormones.

The meeting was dissolved at 10 P. M.

#### One Thousand Two Hundred and Seventy-First Meeting

MAY 14, 1941—ANNUAL MEETING

The Academy met at its House at 8.20 P. M. The President in the Chair.

There were present fifty-three Fellows and thirty-four guests.

The records of the meeting of April 9 were read and approved.

The Corresponding Secretary announced that the following had been elected members of the Academy:

#### FELLOWS

##### CLASS I

- Section 1.* Fred Lawrence Whipple, Cambridge
- Section 2.* Isidor Isaac Rabi, New York, N. Y.
- Section 3.* George Whiteley Coggeshall, Cambridge  
Charles Edward Kenneth Mees, Rochester, N. Y.  
Harry Boyer Weiser, Houston, Texas.  
Ralph Chillingworth Young, Arlington
- Section 4.* Edward Lindley Bowles, Wellesley  
Charles Stark Draper, Newton  
Reinhold Rüdenberg, Belmont  
Vladimir Kosma Zworykin, Camden, N. J.

##### CLASS II

- Section 1.* Alan Mara Bateman, New Haven, Conn.  
Chester Stock, Pasadena, Cal.



- Section 2. Arthur Johnson Eames, Ithaca, N. Y.  
 Section 3. Francis Otto Schmitt, St. Louis, Mo.  
 Section 4. Fuller Albright, Brookline  
 Walter Bauer, Waban  
 Alan Richards Moritz, Waban

## CLASS III

- Section 1. Erwin Nathaniel Griswold, Belmont  
 Section 2. Hajo Holborn, New Haven, Conn.  
 Gaetano Salvemini, Cambridge  
 A. Eugene Staley, Medford  
 Section 3. Carl Rupp Doering, Cambridge  
 Earl Jefferson Hamilton, Durham,  
 N. C.  
 Francis Trow Spaulding, Cambridge  
 Robert Ulich, Cambridge  
 Section 4. Godfrey Lowell Cabot, Boston  
 Frederic Adrian Delano, Wash-  
 ington, D. C.  
 Edward Godfrey Huber, Waban  
 Laurence Leathe Winship, South  
 Sudbury

## CLASS IV

- Section 1. James Bissett Pratt, Williamstown  
 Section 2. Warren Ortman Ault, Waban  
 William E. Lingelbach, Philadelphia,  
 Pa.  
 Section 3. Giuseppe Antonio Borgese, Chicago,  
 Ill.  
 Section 4. Archibald Thompson Davison, Lin-  
 coln  
 Walter Hamor Piston, Jr., Belmont

## FOREIGN HONORARY MEMBERS

## CLASS II

- Section 3. Bernado Alberto Houssay, Buenos  
 Aires, Argentina

## CLASS IV

- Section 4. Jan Sibelius, Helsinki, Finland

The annual reports of the Council, the Treas-  
 urer, and the standing committees were accepted  
 and placed on file, as follows:

## REPORT OF THE COUNCIL

Since the last report there have been reported  
 the deaths of twenty-one Fellows: Charles Value  
 Chapin, Worthington Chauncey Ford, Louis John  
 Gillespie, Robert Grant, William Caspar Grau-  
 stein, William Arthur Heidel, Samuel Henshaw,  
 Charles Clifford Hutchins, Matt Bushnell Jones,  
 Charles Rockwell Lanman, Frederick Lawton,  
 Dayton Clarence Miller, James Madison Morton,  
 James Flack Norris, Raymond Pearl, George  
 Rutledge, Charles Wardell Stiles, Frank William  
 Taussig, Eugene Wambaugh, John Eliot Wolff,  
 Hans Zinsser; and four Foreign Honorary Mem-  
 bers: Henri Louis Bergson, Sir Albert Charles  
 Seward, Josiah Charles Stamp, Baron Stamp, Sir  
 Joseph John Thomson.

Twenty-four Fellows and four Foreign Hon-  
 orary Members were elected by the Council and  
 announced to the Academy at its annual meeting  
 in May 1940.

The roll now includes 765 Fellows and 125  
 Foreign Honorary Members (not including those  
 elected in May 1941).

## TREASURER'S REPORT

## OPERATING RECEIPTS

Income from Investments (Schedule D) . . . . .	\$12,941.09
Unappropriated Income 1940, Transferred Warren Fund . . . . .	\$22.66
Publication Funds . . . . .	39.91
	<hr/> 62.57
<i>Total Income to Funds (Schedule G) . . . . .</i>	<i>\$13,003.66</i>
Income from Trustees Permanent Science Fund . . . . .	12,181.18
Assessments and Admissions . . . . .	4,110.00
Mabel S. Agassiz Fund, Gift . . . . .	2,000.00
Sale of Publications . . . . .	497.24
American Council of Learned Societies, for Lake Fund . . . . .	1,500.00
Lake Publication Fund Subscriptions . . . . .	387.45
Balance of Rumford Fund Grant, Returned	145.33
Anonymous Contribution . . . . .	2,500.00
Appropriations from Current Expense Fund:	
General Academy Expenses,	
Deficit . . . . .	\$268.21
Special Academy Expenses:	
Repairs . . . . .	\$851.41
Policy Committee . . . . .	212.50
	<hr/> 1,063.91
	<hr/> 1,332.12
<i>Total Receipts . . . . .</i>	<i><u>\$37,656.98</u></i>

## OPERATING EXPENDITURES

*Academy, General:*

Library, Salaries...	\$2,078.00
Books and Binding	924.54
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	\$3,002.54
General (Net).....	1,370.06
House (Net).....	2,074.10
President's Office.....	40.50
Treasurer's Office.....	869.35
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Total.....\$7,356.55

*Amory Fund:*

Expense.....62.35

*Special, Recording Secretary:*

Salaries and Expenses.....1,606.29

*Publication Committee:*

General.....	\$5,688.18
Lake.....	2,395.49
Hatch.....	46.18
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	8,129.85

*Rumford Fund:*

Grants.....	\$2,160.00
Miscellaneous.....	4.50
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	2,164.50

*Warren Fund:*

Grant.....	\$280.00
Balance of Income to Fund.....	643.53
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	923.53

*Permanent Science Fund:*

Grants.....	\$10,055.00
Expense.....	20.48
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	10,075.48

Total (Schedule F).....\$30,318.55

## SPECIAL EXPENDITURES

*Current Expense Fund:*

Building & Equip- ment Repairs...	\$851.41
Policy Committee..	212.50
	<hr/>
	\$1,063.91

*Mabel S. Agassiz Fund:*

For Meetings.....	110.20
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	1,174.11

Total Expenditures.....\$31,492.66

Excess Receipts.....6,164.32

Total to Balance.....\$37,656.98

## REPORT OF THE LIBRARY COMMITTEE

During the year 1940-41, 109 volumes and 14 unbound numbers of serials were borrowed by nine Fellows and 16 libraries, and many more have been consulted at the Academy.

The number of volumes on the shelves at the time of the last report was 46,341. During the year 348 volumes were added, making the number now 46,689. Of this number 321 were

received by gift or exchange and 27 were purchased.

The appropriation for the year ending March 31, 1941, was \$3,300, and the expenditures were as follows:

Salaries.....	\$2,078.00
Purchase of Books and Periodicals.....	389.34
Binding.....	535.20
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Total.....\$3,002.54

The exchange of publications with foreign institutions has naturally been much affected by the European war. The number received by us has been greatly reduced, and the Academy, though continuing to mail its publications to foreign subscribers, has not sent any by the International Exchange Service later than no. 4, of vol. 73 of its Proceedings.

Respectfully submitted,

HERVEY W. SHIMER, *Librarian*

May 14, 1941.

## REPORT OF THE RUMFORD COMMITTEE

Between April 1st, 1940 and April 9th, 1941 the following grants were made:

April 23, 1940

No. 356	To Dr. Donald H. Menzel to aid in a quantitative determination of the chemical composition of the solar atmosphere.	\$275
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May 6, 1940

No. 357	To Professor Frank Schlesinger to aid in the installation of an electron multiplier for use in the determination of stellar magnitudes.	150
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October 9, 1940

No. 358	To Dr. Lyman G. Parratt to aid in X-ray spectroscopic studies of the solid state.	325
No. 359	To Dr. E. J. Schremp for continuance of an experimental research program in cosmic rays.	400

December 23, 1940

No. 360	To Professor Wilson M. Powell for projected cosmic ray researches on Mount Evans.	250
No. 361	To Dr. John W. Evans in aid of researches on the solar surface.	310

January 29, 1941

No. 362	To Professor Charles F. Brooks for the construction of a sensitive radiometer for the measurement of long-wave atmospheric radiation.	\$300
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April 9, 1941

- |         |   |     |
|---------|---|-----|
| No. 363 | To Dr. A. H. Pfund for the construction of a modern infrared spectroscope to be used by him and his students for pure research. | 400 |
| No. 364 | To Professor J. R. Roebuck to aid him in his work on the Joule-Thomson effect.  | 200 |
| No. 365 | To Dr. E. P. Little for the measurement of the optical properties of various metals in the Schumann region.                     | 280 |

Letters were sent to nine recipients of grants made between October 2, 1939, and October 9, 1940. Replies were received from all grantees and considerable progress was reported.

The Committee submitted to the Council the name of Dr. Vladimir Kosma Zworykin as Rumford medalist, the medals being awarded for his invention of the iconoscope and other television devices.

Respectfully submitted,  
NORTON ADAMS KENT,  
*Chairman*

May 14, 1941.

#### REPORT OF THE C. M. WARREN COMMITTEE

The Committee had at its disposal during the fiscal year, 1940-41, the sum of \$870.

Since the last annual report the following grant has been made:

To Professor E. C. Gilbert of Oregon State College, \$280 to be used to cover the cost of apparatus necessary for his work on the heat of combustion of the heptanes.

On account of the small return from the endowment of the Fund, it was voted to return to the Treasurer the excess of the money available this year over the \$280 above noted, to be added to the principal.

Reports of progress have been received from Messrs. Amdur, Gilbert and Huntress.

A reprint has been received on research aided by the Warren Fund, namely:

"Identification of Organic Compounds. II. Piperidyl Derivatives of Aromatic Halogenonitro Compounds." Margaret K. Seikel. J. Am. Chem. Soc. 62, 750 (1940).

Respectfully submitted,  
FREDERICK G. KEYES,  
*Chairman*

May 14, 1941.

#### REPORT OF THE COMMITTEE OF PUBLICATION

The Committee has held four meetings during the year, two of which were quite protracted, and work of the Committee was greatly facilitated by the fact that the President and the Treasurer agreed in recommending to the Council that an appropriation of \$200 be made available to the Chairman for secretarial expenses. In this connection, the Chairman wishes to express in behalf of himself and the Committee his thanks to the Council.

During the year a considerable body of papers were published (fifteen all told) comprising numbers 8-15 of volume 73 and 1-7 of volume 74. It should be noted that in all cases these papers had been accepted during the previous years, and that no new papers were published.

The Chairman regrets to report that the publication appropriation was overdrawn by \$215.91. This was primarily due to an error on his part in not distinguishing between general and restricted funds and also to the fact that the *Records Number* was considerably larger than had been estimated, owing to the fact that it covered two years of the Academy's activities and contained a large number of biographical memoirs, two of which were of very considerable length.

With regard to Professor Lake's publication of *Dated Greek Manuscripts*, it was agreed that, in view of present conditions, the publication of a final fascicule comprising manuscripts from Sinai, Spain and some other scattered material, would have to be deferred, and it was advisable to proceed with the preparation of the Index on the basis of the material already published. Professor and Mrs. Lake are now at work on this, and specimen pages are awaited shortly.

With regard to Professor Hatch's publication, *An Album of Dated Syriac Manuscripts*, it seemed inadvisable, under war conditions, to continue the plan of publication with the Oxford University Press which had been previously adopted. Your Committee, feeling that a decision of this importance should be taken by the Council, submitted a memorandum on the matter to that body, and the manuscript was withdrawn from the Oxford Press. It has now become possible to obtain an adequate supply of Syriac characters in America, and negotiations have been opened for its publication here. The plates are being prepared by the Meriden Gravure Company, and

final blueprints of them are in the hands of the author and the editor. The printing will be carried out by the J. H. Furst Company of Baltimore, but it will probably be necessary to defer completion of this work for some months in view of the inadequacy of the funds now available.

A study has been initiated of the Academy's publications over the last ten years, with a view to establishing a normal estimated page cost of different types of scientific work and of analyzing the amount of publication in various scientific fields so as to bring about a more rounded series of publications by the Academy.

The income for the year was \$5,472.27. There was expended \$5,688.18, forming an overdraft of \$215.91, as noted above. The estimated income for the year 1941-42 has been fixed at \$2,350.

The Chairman has no general recommendations to make apart from the following:

It seems advisable, where mathematical papers are concerned, to have them printed in the *Memoirs*, where the different format is advantageous.

Respectfully submitted,

ROBERT P. BLAKE,  
*Chairman*

May 14, 1941.

#### REPORT OF THE HOUSE COMMITTEE

During the year 1940-41 the House Committee has had at its disposal funds amounting to \$2,199.60, made up as follows:

Appropriation for 1940-41.....	\$2,000.00
Received from other societies for the use of rooms.....	199.60
Total.....	\$2,199.60

The expenditures amounted to \$2,273.70, a detailed list of which follows:

Janitor.....	\$962.00
Electricity: Light.....	190.71
Power.....	53.82
Fuel.....	714.47
Elevator.....	60.00
Telephone.....	114.99
Gas.....	46.94
Water.....	34.96
Upkeep.....	61.32
Janitor's supplies and sundries.....	34.49
Total.....	\$2,273.70

During the summer of 1940, \$562 was spent for building repairs, chiefly to the roof, and \$289.41 for the cleaning and repair of rugs, draperies and furniture. These items were not included in the House account figures, since they were paid for from the Current Expense Fund.

Meetings have been held as follows:

The Academy: Stated meetings.....	8
Conferences on Science and Values.....	7
Boston Surgical Society.....	3
Bureau of University Travel.....	3
Emergency Rescue Committee.....	1
Geological Society of Boston.....	2
New England Botanical Club.....	9
Total.....	33

The Council Chamber has been used for the Academy Council and Committee meetings, and also by the Trustees of the Children's Museum and the Farm and Garden Association.

Respectfully submitted,

E. F. LANGLEY, *Chairman*

May 14, 1941.

It was *Voted*, to amend Chapter XI, Article 2, Section x, of the Statutes, as follows:

The first paragraph shall be amended by striking out the word "notices" and inserting "records." The paragraph shall be further amended by adding after "Fellows" the words "and Foreign Honorary Members."

The second paragraph shall be omitted in its entirety.

It was *Voted*, to confirm the award already made by the Council of the Rumford Medal to Vladimir Kosma Zworykin, of Camden, N. J., for his invention of the iconoscope and other television devices.

It was *Voted*, that the annual assessment for the ensuing year shall be ten dollars for Fellows living within fifty miles of Boston.

The following officers and committees were elected for 1941-1942:

HARLOW SHAPLEY, *President*

PERCY W. BRIDGMAN, *Vice-President for Class I*

S. BURT WOLBACH, *Vice-President for Class II*

SIDNEY B. FAY, *Vice-President for Class III*

FRED N. ROBINSON, *Vice-President for Class IV*

ABBOTT P. USHER, *Corresponding Secretary*

HUDSON HOAGLAND, *Recording Secretary*

HORACE S. FORD, *Treasurer*

FREDERICK H. PRATT, *Librarian*  
ROBERT P. BLAKE, *Editor*

*Councillors for Four Years:*

NORTON A. KENT, for Class I  
DAVID RAPPORT, for Class II  
EDWARD H. CHAMBERLIN, for Class III  
SAMUEL H. CROSS, for Class IV

*Committee on Policy and Resources:*

HENRY S. DENNISON, *Chairman*  
DUGALD C. JACKSON, *Member for Five Years*

*Finance Committee:*

ALFRED L. RIPLEY      RALPH E. FREEMAN  
JOHN F. EBERSOLE      HENRY P. KENDALL

*Rumford Committee:*

NORTON A. KENT, *Chairman*      HARLOW SHAPLEY  
GEORGE R. HARRISON  
PERCY W. BRIDGMAN      ROBERT B. LINDSAY  
HARRY M. GOODWIN      GEORGE W. PIERCE

*C. M. Warren Committee:*

FREDERICK G. KEYES,      TENNEY L. DAVIS  
*Chairman*      CHARLES A. KRAUS  
GREGORY P. BAXTER      REID HUNT  
WALTER L. JENNINGS      GRINNELL JONES

*Committee of Publication:*

ROBERT P. BLAKE, *Chairman*  
EDWIN C. KEMBLE, of Class I  
RALPH H. WETMORE, of Class II  
JOSEPH H. BEALE, of Class III  
ROBERT P. CASEY, of Class IV

*Committee on the Library:*

FREDERICK H. PRATT, *Chairman*  
RAYMOND C. ARCHIBALD, of Class I  
THOMAS BARBOUR, of Class II  
NATHAN ISAACS, of Class III  
HENRY B. WASHBURN, of Class IV

*Auditing Committee:*

GEORGE R. AGASSIZ  
ALEXANDER FORBES

*House Committee:*

ERNEST F. LANGLEY, *Chairman*  
H. ADDINGTON BRUCE  
ROBERT P. BIGELOW  
WALTER E. CLARK

*Committee on Biographical Notices:*  
*For Three years:*

J. SEELEY BIXLER, *Chairman*  
HUDSON HOAGLAND

*Committee on Meetings:*

THE PRESIDENT

THE RECORDING SECRETARY

LEONARD CARMICHAEL      TENNEY L. DAVIS  
SAMUEL H. CROSS      SOMA WEISS

This year for the first time the Francis Amory septennial prize was awarded, the sum of \$17,000 being divided equally between four individuals, and at this meeting the presentation was made to the three American winners. The fourth winner is a European scientist in a country unhappily dominated by Nazi invaders. His name will not now be made public and his prize will be held here in trust.

Each of the three recipients was presented to the Academy by a member of the Committee on the Francis Amory Fund: Dr. Hugh H. Young, by Dr. William C. Quinby; Dr. Joseph F. McCarthy, by Dr. David Cheever; and Dr. Carl Richard Moore, by Dr. Leigh Hoadley.

They then addressed the Academy, describing their investigations, placing special emphasis on the circumstances leading to the culmination of the work for which the prize was given.

The meeting was dissolved at 10.45 P. M.

**One Thousand Two Hundred and Seventy-Second Meeting**

OCTOBER 8, 1941—STATED MEETING

The Academy met at its House at 8.15 P. M.  
The President in the Chair.

There were present 83 Fellows, one Foreign Honorary Member, and 53 guests.

The records of the meeting of May 14 were read and approved.

The Corresponding Secretary reported the receipt of letters accepting Fellowship from Fuller Albright, Warren Ortman Ault, Alan Mara Bate-man, Walter Bauer, Giuseppe Antonio Borgese, Edward Lindley Bowles, Godfrey Lowell Cabot, George Whiteley Coggeshall, Archibald Thompson Davison, Frederic Adrian Delano, Carl Rupp Doering, Charles Stark Draper, Arthur Johnson Eames, Erwin Nathaniel Griswold, Earl Jefferson Hamilton, Hajo Holborn, Edward Godfrey



Huber, William E. Lingelbach, Charles Edward Kenneth Mees, Alan Richards Moritz, Walter Hamor Piston, Jr., James Bissett Pratt, Isidor Isaac Rabi, Reinhold Rüdenberg, Gaetano Salvemini, Francis Otto Schmitt, Francis Trow Spaulding, Chester Stock, Robert Ulich, Harry Boyer Weiser, Fred Lawrence Whipple, Ralph Chillingworth Young, and Vladimir Kosma Zworykin; and a letter accepting Foreign Honorary Membership from Bernado Alberto Houssay; also a letter declining Fellowship from A. Eugene Staley.

The Corresponding Secretary announced that the Council had made the following grants from the Permanent Science Fund, on the recommendation of the Committee on the Permanent Science Fund:

1. To Warren Andrew, Assistant Professor of Histology and Embryology, Baylor University, for animals and expendable materials, and for assistance in the study of senile changes in mammals, \$300.

2. To Forrest F. Cleveland, Associate Professor of Physics, Illinois Institute of Technology, toward the purchase of specified optical equipment, for use in an investigation of Raman spectra of gases and vapors, contingent upon his securing a like sum from other sources, \$500.

3. To Rita Guttman, Instructor, Brooklyn College, for equipment and expendable materials for continuing a study of electrical rectification in single nerve fibers, \$200.

4. To Rudolf Höber, Visiting Professor of Physiology, University of Pennsylvania, for assistance in a study of molecular configurations and the transport of organic molecules across secretory cells, \$600.

5. To Lewis H. Kleinholz, Instructor, Cambridge Junior College, for animals and materials for use in a study of hormonal factors in ecdysis of crustacea, \$200.

6. To Irvin M. Korr, Instructor, New York University, for purchase of special differential manometers and vessels for use in a study of carbohydrate metabolism in resting and active tissues, \$232.50.

7. To Valy Menkin, Assistant Professor of Pathology, Harvard Medical School, for animals, materials, and assistance in the study of diabetes and inflammation, \$600.

8. To George Howard Parker, Professor of Zoology, Emeritus, Harvard University, for expendable materials in a study of the action of neurohumors upon melanophores of the catfish, the eel, and the killifish, \$150.

9. To Edward J. Schremp, Assistant Professor, University of Cincinnati, for assistance in a continuing cosmic-ray research program, \$350.

10. To Charles W. Turner, Professor of Dairy Husbandry, University of Missouri, for purchase of animals for a continuing study of thyroid and pituitary hormone interrelations, \$300.

11. To Clarence Zener and Kenneth Fitzsimmons, Associate Professor and Instructor, respectively, State College of Washington, for construction of apparatus for use in the study of elastic after-effect in cold worked metals, \$400.

Professor Norton A. Kent, chairman of the Rumford Committee, introduced Dr. Vladimir K. Zworykin as the Rumford medalist of 1941 for his invention of the iconoscope and other television devices, and the President presented the medals to him.

Dr. Zworykin then spoke on "The Electron Microscope."

Two papers were presented by title: "Pressure-Volume Relations for Seventeen Elements to 100,000 kg/cm<sup>2</sup>," by P. W. Bridgman; "The Lower Permian Insects of Kansas. Part 9," by F. M. Carpenter.

The meeting was dissolved at 10.05 P. M.

#### One Thousand Two Hundred and Seventy-Third Meeting

NOVEMBER 12, 1941—STATED MEETING

The Academy met at its House at 8.20 P. M.

The President in the Chair.

There were present seventy-six Fellows, one Foreign Honorary Member and thirty-eight guests.

The records of the meeting of October 8 were read and approved.

The Corresponding Secretary reported the receipt of a letter from Laurence Leathe Winship accepting his election as a Fellow; also letters from Walter R. Spalding and Donald D. Van Slyke resigning Fellowship.

The President announced that the general subject of the monthly meetings of the Academy for the remainder of the Academic year will be the Analysis of Post-War Problems and Pro-

cedures, and that special meetings for informal discussion will be held on the Monday evenings following the stated meetings.

The following communication was presented: Alfred North Whitehead: "Statesmanship and Specialized Learning."

Professor Harry Berman, Curator of the Mineralogical Museum of Harvard University, then described the exhibit of gems and gem minerals which was on view in the Reading Room.

One paper was read by title: "Freezing Parameters and Compressions of 21 Substances to 50,000 kg/sq. cm<sup>2</sup>," by P. W. Bridgman.

The meeting was dissolved at 9.15 P. M.

#### **One Thousand Two Hundred and Seventy-Fourth Meeting**

DECEMBER 10, 1941—STATED MEETING

The Academy met at its House at 8.21 P. M.  
The President in the Chair.

There were present seventy-three Fellows and fifty-four guests.

The records of the meeting of November 12 were read and approved.

The following communications were presented:

Igor I. Sikorsky: "Direct Lift Aircraft in War and Peace," with motion picture illustrations.

Walter S. Lemmon: "Radio as a New Force in the Post War World."

Professor Robert H. Pfeiffer then described a special exhibit of inscriptions and other objects excavated at Nuzi (near Kirkuk, Iraq), dating from the period 2500-1500 B. C.

Two papers were read by title: "The Approximate Solution of Singular Equations Arising in Engineering Practice," by Francis R. Hildebrand, presented by E. C. Kemble and J. H. Van Vleck; "The Inner Chapters of Pao-p'u-tzŭ," by Tenney L. Davis and Ch'ên Kuo-fu.

The meeting was dissolved at 10.10 P. M.

#### **One Thousand Two Hundred and Seventy-Fifth Meeting**

JANUARY 14, 1942—STATED MEETING

The Academy met at its House at 8.30 P. M.  
The President in the Chair.

This meeting had been designated as Ladies' Night, and there were present about 200 Fellows and their guests.

The records of the meeting of December 10 were read and approved.

The following communication was presented:

Zechariah Chafee, Jr.: "International Utopias."

Dr. Reginald Fitz then described an exhibit of letters and an unpublished manuscript of Dr. Benjamin Waterhouse (1754-1846). This manuscript (the property of the Academy) is a paper entitled "Observations on Epidemic Diseases," which was read at the 13th meeting of the Academy, on May 27, 1783, and it was

*Voted* that the paper should now be published.

The meeting was dissolved at 10.15 P. M.

#### **One Thousand Two Hundred and Seventy-Sixth Meeting**

FEBRUARY 11, 1942—STATED MEETING

The Academy met at its House at 8.25 P. M.  
Vice-President Fay in the Chair.

There were present fifty-eight Fellows and twenty-three guests.

The records of the meeting of January 14 were read and approved.

The following communications were presented:

Clarence F. Jones: "South America and the War."

Samuel Van Valkenburg: "The Importance of the Netherlands East Indies."

Mr. Eric Schroeder then described a special exhibit of Persian book art.

The meeting was dissolved at 10.15 P. M.

#### **One Thousand Two Hundred and Seventy-Seventh Meeting**

MARCH 11, 1942—STATED MEETING

The Academy met at its House at 8.30 P. M.  
The President in the Chair.

There were present thirty-seven Fellows, one Foreign Honorary Member and twenty-four guests.

The records of the meeting of February 11 were read and approved.

The Corresponding Secretary announced that the Council had made the following grants from the Permanent Science Fund:

1. To Elso S. Barghoorn, Jr., Instructor in Biology, Amherst College, for miscellaneous expenses of field work and laboratory study of the structural changes in submerged wood and plant remains, \$335.

2. To Thomas H. Bissonnette, Professor of Biology, Trinity College, Hartford, Conn., for expendable materials and assistance in a further study of photoperiodicity in animals, \$400.

3. To Bart J. Bok, Associate Professor of Astronomy, Harvard University, for the construction of a 26-inch circular mosaic grating to be used with a 24-inch Schmidt telescope, a joint project in collaboration with Dr. R. W. Wood, of Johns Hopkins University, \$750.

4. To Vernon I. Cheadle, Assistant Professor of Botany, Rhode Island State College, for assistance in continuing a study of the conducting systems of the Monocotyledoneae, \$350.

5. To Clark Goodman, Research Associate, Massachusetts Institute of Technology, for construction of equipment to be used in continuation of a study of the locus and relative concentration of elements in ores by the use of induced radioactivity, \$650.

6. To Cornelius S. Hurlbut, Jr., Associate Professor of Mineralogy, Harvard University, for construction of equipment to be used in a study of refractive indices of amphibole and other minerals, \$450.

7. To Fred M. Uber, Assistant Professor of Physics, University of Missouri, for reagents for use in a study of synthesis of kojic acid by micro-organisms using  $C^{13}$  as a tracer, \$425.

On the recommendation of the Council the following appropriations were voted for the year 1942-1943:

From the income of the General Fund, \$7,000, to be used as follows:

for House expenses.....	\$2,000
for General and Meeting expenses.....	1,000
for Library expenses.....	3,000
for Treasurer's expenses.....	900
for President's expenses.....	100
	<hr/>
	\$7,000

From the income of the Publication Funds, \$2,000, to be used for publication.

From the income of the Rumford Fund, \$3,000, to be used at the discretion of the Committee.

From the income of the C. M. Warren Fund, \$875, to be used at the discretion of the Committee.

The President announced the appointment of the Nominating Committee:

George R. Agassiz, of Class I  
Warren J. Mead, of Class II  
Austin W. Scott, of Class III  
Michael J. Ahern, of Class IV, *Chairman*.

The Symposium on Anthropology and World Equilibrium consisted of papers by the following:

1. Carleton S. Coon: "Systems of Human Relations."

2. Conrad M. Arensberg: "Nature of World Equilibrium."

3. Eliot D. Chapple: "How a World Equilibrium Can be Organized."

As Dr. Arensberg was unable to be present, his paper was read by the Recording Secretary.

Following the symposium, Dr. Clark Goodman presented a demonstration of neutron activation of minerals.

The meeting was dissolved at 10.15 P. M.

#### One Thousand Two Hundred and Seventy-Eighth Meeting

APRIL 8, 1942—STATED MEETING

The Academy met at its House at 8.30 P. M.

The President in the Chair.

There were present thirty-eight Fellows and thirty-four guests.

The records of the meeting of March 11 were read and approved.

The President announced plans to publish in the Academy's Proceedings the papers on post war problems and procedures which have been read at the meetings this year.

The following communication was presented:

A. Warren Stearns: "Psychiatry and the Structure of Society."

Mr. Henry Bradford Washburn, Jr. demonstrated two large aerial cameras and described how they are operated for both vertical mapping and pictorial photography from the air.

The President described some Mexican stamps issued to commemorate the establishment of the new Mexican National Astrophysical Observatory.

The meeting was dissolved at 10.10 P. M.

#### One Thousand Two Hundred and Seventy-Ninth Meeting

MAY 13, 1942—ANNUAL MEETING

The Academy met at its House at 8.20 P. M.

The President in the Chair.

There were present thirty-one Fellows and eighteen guests.

The records of the meeting of April 8 were read and approved.

The Corresponding Secretary reported that the



Council recommended an amendment to Chapter II, Article 2, of the Statutes, to be acted on by the Academy at some future meeting. This new paragraph would read as follows:

"Members of the Academy on retiring from their academic or other regular duties may, if they so desire and with the approval of the Council, be transferred to the status of Fellows Emeriti. Fellows Emeriti shall be exempt from the payment of dues and may not hold office in the Academy, but shall have all the other privileges of Fellowship. In the published lists of the membership of the Academy, Fellows Emeriti shall be separately classified, and shall be outside the statutory limit set on the number of Fellows."

The annual report of the Council was presented:

### REPORT OF THE COUNCIL

Since the last report of the Council the deaths of seventeen Fellows have been reported: Joseph Charles Arthur, Henry Wolf Bickl , Carleton Brown, Philip Cabot, Raymond Dodge, Charles Downer Hazen, Lawrence Joseph Henderson, Eugene Xavier Louis Henry Hyvern t, Nathan Isaacs, Frederick John Foakes Jackson, George Lyman Kittredge, Kurt Koffka, William Lawrence, Frank Burr Mallory, William Albert Noyes, Charles Henry Taylor, Soma Weiss; and of five Foreign Honorary Members: Tullio Levi-Civita, Friedrich von M ller, Charles  mile Picard, Werner Sombart, Hans Spemann.

Thirty-five Fellows and two Foreign Honorary Members were elected by the Council and announced to the Academy in May 1941.

The roll now includes 779 Fellows and 122 Foreign Honorary Members (not including those elected in May 1942).

The Treasurer's report was read of which the following is an abstract:

#### TREASURER'S REPORT

##### \*RECEIPTS

##### Academy, General:

From: Investment Income (Schedule D) . . .	\$12,381.82
Less: Income to Special Funds . . .	9,463.58
	<hr/> \$2,918.24
Assessments and Admission Fees . . . . .	4,345.00
	<hr/> \$7,263.24

##### Amory Fund Committee:

From: Investment Income . . . . . \$2,943.36

##### Publications Committee:

From: Investment Income	
Appropriation . . . . .	\$2,350.00
Contribution . . . . .	5.00
Sale of Publications . . . . .	184.85
American Council of Learned Societies, Hatch Fund	1,168.00
Subscriptions, Lake Publi- cation . . . . .	149.75
	<hr/> 3,857.60

##### Rumford Fund Committee:

From: Investment Income . . . . . 3,002.02

##### Warren Fund Committee:

From: Investment Income Appropriation . . . . . 1,000.00

##### Mabel S. Agassiz Fund:

From: Investment Income . . . . . 109.20

##### Permanent Science Fund:

From: Boston Safe Deposit & Trust Co., Trustee . . . . .	\$7,220.96
Return of Grant (temporary) . . . . .	200.00
	<hr/> 7,420.96

##### Kennelly Fund:

From: Investment Income . . . . . 59.00

##### Investment Reserve Fund:

From: Final Liquidation Payment on Se-  
curity held . . . . . 126.72

Total Receipts . . . . . \$25,782.10

#### †EXPENDITURES

##### Academy, General:

Library, Salaries . . .	\$2,072.00
Books & Binding . . .	622.00
	<hr/> \$2,694.00
General (Net) . . . . .	1,191.59
House (Net) . . . . .	2,225.81
President's Office . . . . .	59.50
Treasurer's Office . . . . .	514.87
Insurance . . . . .	519.10
	<hr/> \$7,204.87

##### Amory Fund:

Grants (Septennial Prizes) . . .	†\$17,200.00
Expense . . . . .	192.99
	<hr/> 17,392.99

##### Publications Committee:

General . . . . .	\$1,732.24
Lake . . . . .	172.00
Hatch . . . . .	2,162.20
	<hr/> 4,066.44

##### Rumford Fund Committee:

Grants . . . . .	\$2,730.00
Medals . . . . .	333.15
	<hr/> 3,063.15

\* Excluding sales of securities.

† Excluding purchases of securities.

‡ \$4,300 Grant deferred.

<i>Warren Fund Committee:</i>	
Grants.....	\$975.00
<i>Mabel S. Agassiz Fund:</i>	
For Meetings.....	109.20
<i>Permanent Science Fund:</i>	
Grants.....	\$8,162.50
Expense.....	28.46
	<hr/> 8,190.96
<i>Special Expense:</i>	
Rec. Secretary.....	\$754.28
Less Credit.....	340.75
	<hr/> \$413.53
President's Special Fund. . . .	100.00
<i>Current Expense Fund:</i>	
Building & Equip- ment Repairs	\$165.72
Policy Com.....	340.75
	<hr/> 506.47
	<hr/> 1,020.00
<i>Total Expenditures.....</i>	<u>\$42,022.61</u>

The annual reports of the standing committees were presented:

#### REPORT OF THE LIBRARY COMMITTEE

During the year 95 volumes and 23 unbound numbers of serials were borrowed by 10 Fellows and 20 libraries, and many more were consulted at the Academy.

The number of volumes on the shelves at the time of the last report was 46,689. Since then 208 volumes have been added, making the number now 46,897. Of the additions 179 were received by gift or exchange, and 29 were purchased.

The appropriation for the year ending March 31, 1942, was \$3,200, and the expenditure was as follows:

Salaries.....	\$2,072.00
Purchase of books and periodicals.....	196.50
Binding.....	425.50
	<hr/>
Total.....	\$2,694.00

Respectfully submitted,

FREDERICK H. PRATT,  
*Librarian*

May 13, 1942.

#### REPORT OF THE RUMFORD COMMITTEE

A meeting of the Rumford Committee was held October 6, 1941. At that meeting the following grants were made:

No. 366	To Professor C. T. Elvey for the construction and use of apparatus for studying the light of the night sky	\$400
No. 367	To Dr. K. W. Meissner to assist in the construction of his atomic beam apparatus.	250
No. 368	To Dr. E. J. Schremp in continued support of his cosmic ray researches.	400
No. 369	To Dr. G. Z. Dimitroff to aid in his studies of the sensitivity of photographic emulsions.	400
Grants made by correspondence between December 10, 1941 and April 13, 1942 were as follows:		
October 16, 1941		
No. 370	To Professor Wilson M. Powell in continued support of cosmic ray researches.	\$250
April 13, 1942		
No. 371	To Professors J. C. Stearns and D. K. Froman to aid in their study of mesotrons in the cosmic rays at both Denver and Mount Evans.	400

Letters were sent to sixteen recipients of grants made between October 2, 1939, and October 6, 1941. In their replies eight grantees reported progress in their investigations while five stated that the war was interfering with their researches. From the three remaining no replies were received.

On October 8, 1941, the Rumford Medals were presented by the Academy to Dr. Vladimir Kosma Zworykin for his "Invention of the Iconoscope and Other Television Devices."

Following the award of these medals Dr. Zworykin addressed the Academy, the subject of his address being "The Electron Microscope."

Respectfully submitted,

NORTON ADAMS KENT,  
*Chairman*

May 13, 1942.

#### REPORT OF THE C. M. WARREN COMMITTEE

The Committee had at its disposal during the fiscal year, 1941-42, the sum of \$1,000. From this amount a total of \$975 has been granted as follows:

To Professor H. S. Booth of Western Reserve University, Cleveland, Ohio, a grant of \$300,

awarded with the agreement that Western Reserve University contribute the balance of \$220 needed for the purchase of a Mueller bridge for use in investigations on the physical constants of gases.

To Professor G. Krotkov of Queen's University, Kingston, Ontario, the amount of \$180 for the purchase of a photoelectric colorimeter for his work on investigations of the biochemical changes in apples during storage.

To Professor J. W. McBain of Stanford University, California, the sum of \$395 for the purchase of a lumetron photoelectric colorimeter with mercury vapor lamp and quartz optical system, cell, and selected filters. This apparatus is for use in investigating the problem of solubilization of substances.

To Dr. Philip Pizzolato of Louisiana State University, New Orleans, Louisiana, a grant of \$100 for the purchase of materials (animals, stains, and chemicals) for investigations pertaining to the effect of amino acids, purins, hormones, and vitamins on the creatine-creatinine relationships in muscle metabolism.

The balance of \$25 not awarded will be added to the principal.

A report on work accomplished has been received from Professor Krotkov, and reprints covering work assisted by grants have been received from:

Professor E. C. Gilbert: "The Heat of Combustion of cis- and trans-Decahydro-naphthalene." G. F. Davies and E. C. Gilbert, *J. Am. Chem. Soc.* 63, 1585 (1941).

Professor Paul L. Kirk: "Microscopy of the Amino Acids and Their Compounds." K. Inouye, R. Sunderlein and P. L. Kirk. *Ind. and Eng. Chem.* 13, 587 (1941).

Professor G. Krotkov: "The Respiratory Metabolism of McIntosh Apples, During Ontogeny, as Determined at 22° C." *Plant Physiology*, 16, p. 799 (1941).

Apparatus purchased through a grant from the fund has been returned to the Chairman by Professor J. L. Jones of Howard University, Washington, D. C. This apparatus consists of: 2 greaseless high vacuum glass valves; 1 Weston photronic cell No. 2a; 1 housing for photronic cell; 1 set of numbered glass filters (Corning); 2 Bausch and Lomb lenses (numbered); 1 book gold

foil; 1 piece platinum wire; 1 electric furnace—consisting of No. 18 nichrome wire wrapped on an aluminum cylinder covered with asbestos. The furnace will maintain a temperature of 400° C. indefinitely and has two sets of heating windings. The furnace is equipped with pyrex windows for visual observation of vessels placed in the aluminum shield.

Respectfully submitted,

FREDERICK G. KEYES,  
Chairman

May 13, 1942.

#### REPORT OF THE COMMITTEE OF PUBLICATION

The Publication Committee has held one meeting during the year, other necessary business having been transacted by correspondence. Six numbers of the *Proceedings* (Vol. 74, Nos. 8-13) were published in the course of the year and also one number of the *Memoirs* (Vol. 19, No. 1).

In connection with Professor and Mrs. Kirsopp Lake's *Dated Greek Manuscripts*, the Chairman has to report that the Index to the ten fascicules already published is nearing completion. Work on this has been somewhat delayed owing to the impending removal of Mr. and Mrs. Lake to Southern California. They expect, however, to send the manuscript in before they depart in September. Work on Professor Hatch's *Album of Dated Syriac Manuscripts* is progressing rapidly. The plates were completed and printed last spring by the Meriden Gravure Company, but the Editor was unwilling to proceed further until the funds necessary for the letterpress were assured. This has become possible through the action of the Council by making available \$1,000 from the Amory Fund, which will be repaid by appropriations from the Publication Fund and the proceeds of the book. The printing of the letterpress has been entrusted to the J. H. Furst Company of Baltimore, and three-quarters of the galley proof has been received and corrected. It is anticipated that the book will appear in the fall, as the Index will have to be compiled from the page proof.

\$100 from the Publication Funds were contributed towards a volume of *Studies in the History of Culture* offered to Mr. Waldo G. Leland of the ACLS. The Editor contributed a paper to it on behalf of the Academy.

The Rumford Committee has been of material assistance to our Committee by making appropriations toward publication in the *Proceedings* of studies by Professor Beattie and Associates (Vol. 74, 11) and of two papers by Professor Bridgman (Vol. 74, 12 and 13).

The funds that we shall have available after meeting our outstanding obligations will permit only a small amount of publication for the ensuing year, nor is there, it would appear, much hope of obtaining additional assistance for printing the papers next in line.

The Chairman has one general suggestion to offer, namely, that the main bulk of the unsold numbers of Professor and Mrs. Lake's *Dated Greek Manuscripts* be sent on from Baltimore to Boston and stored in the Academy's House. He is apprised that room is available there. A small number of copies of each fascicle could be left with the Waverly Press to meet current orders, and these could be replenished from time to time from the stock held in Boston. Such an arrangement would save us a considerable sum in storage charges which would otherwise eat into the balance of the subsidy from the Carnegie Corporation which we are holding in trust against an eventual eleventh and final fascicle of the series.

May 1, 1941

*General Publication Fund:*

Receipts: Overdraft.....	\$215.91
Appropriation.....	2,350.00
Expenditures.....	1,732.44

Balance.....	\$591.70
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*Hatch Fund:*

Balance.....	\$1,452.82
Rec. ACLS.....	1,168.00
Expenditures.....	2,162.20

Balance.....	\$459.82
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*Lake Fund:*

Balance.....	\$709.28
Rec. Christophers.....	149.75
Expenditures.....	172.00

Balance.....	\$682.03
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Respectfully submitted,

ROBERT P. BLAKE,  
Chairman

May 13, 1942.

# REPORT OF THE HOUSE COMMITTEE

During the year ending March 31, 1942, the House Committee has had at its disposal funds amounting to \$2,170, made up as follows:

Appropriation for 1941-1942.....	\$2,000
Received from other societies for the use of rooms.....	170
Total.....	\$2,170

The expenditures amounted to \$2,395.81. Of this the sum of \$2,162.28 was spent for the routine expenses, janitor, heat, light, telephone, etc. and \$233.53 for upkeep, furnishings and equipment, including blackout shades and other equipment needed in the event of air raids.

Meetings have been held as follows:

The Academy: Stated meetings.....	8
Group discussion meetings.....	3
American Oriental Society.....	1
Boston Surgical Society.....	3
Committee on Russian War Relief.....	1
Friends of China, Inc.....	4
Geological Society of Boston.....	1
Mediaeval Academy of America.....	1
New England Botanical Club.....	9
Pan American Society of Massachusetts.....	4
Solar Conference.....	1
Trustees of the Sharon Sanatorium.....	1
Total.....	37

The Council Chamber has been used for Academy Council and Committee meetings, and also by the Trustees of the Children's Museum and the New England Farm and Garden Association.

A detailed list of expenditures follows:

Janitor.....	\$963.00
Electricity: Light.....	196.17
Power.....	73.58
Fuel.....	595.60
Elevator service and repairs.....	99.26
Telephone.....	114.16
Gas.....	50.40
Water.....	40.48
Upkeep.....	107.90
Furnishings and equipment.....	125.63
Janitor's supplies and sundries.....	29.63
Total.....	\$2,395.81

Respectfully submitted,

E. F. LANGLEY,  
Chairman

May 13, 1942.

On the recommendation of the Treasurer, the Academy voted that the annual assessment for the year 1942-1943 for resident Fellows be ten dollars.

The annual election of officers and committees resulted as follows:

HARLOW SHAPLEY, *President*

PERCY W. BRIDGMAN, *Vice-President for Class I*

S. BURT WOLBACH, *Vice-President for Class II*

SIDNEY B. FAY, *Vice-President for Class III*

FRED N. ROBINSON, *Vice-President for Class IV*

ABBOTT P. USHER, *Corresponding Secretary*

HUDSON HOAGLAND, *Recording Secretary*

HORACE S. FORD, *Treasurer*

FREDERICK H. PRATT, *Librarian*

ROBERT P. BLAKE, *Editor*

#### *Councillors for Four Years:*

BART J. BOK, of Class I

LOUIS C. GRATON, of Class II

EDWARD S. THURSTON, of Class III

EDGAR S. BRIGHTMAN, of Class IV

#### *Committee on Policy and Resources:*

*Member for Five Years and Chairman:*

HENRY S. DENNISON

*Member for Two Years:*

HORACE S. FORD

#### *Finance Committee:*

JEROME C. HUNSAKER      HENRY P. KENDALL

RALPH E. FREEMAN      JOHN F. EBERSOLE

#### *Rumford Committee:*

NORTON A. KENT, *Chair-*      HARLOW SHAPLEY

*man*      GEORGE W. PIERCE

PERCY W. BRIDGMAN      GEORGE R. HARRISON

HARRY M. GOODWIN      ROBERT B. LINDSAY

#### *C. M. Warren Committee:*

FREDERICK G. KEYES      TENNEY L. DAVIS

*Chairman*      CHARLES A. KRAUS

GREGORY P. BAXTER      REID HUNT

WALTER L. JENNINGS      GRINNELL JONES

#### *Committee of Publication*

ROBERT P. BLAKE, *Chairman*

EDWIN C. KEMBLE, of Class I

RALPH H. WETMORE, of Class II

JOSEPH H. BEALE, of Class III

ROBERT P. CASEY, of Class IV

#### *Committee on the Library:*

FREDERICK H. PRATT, *Chairman*

RAYMOND C. ARCHIBALD, of Class I

THOMAS BARBOUR, of Class II

FRANCIS N. BALCH, of Class III

HENRY B. WASHBURN, of Class IV

#### *Auditing Committee:*

ERWIN H. SCHELL      ALEXANDER FORBES

#### *House Committee:*

ERNEST F. LANGLEY, *Chairman*

H. ADDINGTON BRUCE

ROBERT P. BIGELOW

WALTER E. CLARK

#### *Committee on Biographical Notices:*

HUDSON HOAGLAND, *Chairman*

#### *For Three Years:*

ALFRED C. LANE      JOSEPH H. BEALE

#### *For Two Years:*

HERVEY W. SHIMER

#### *Committee on Meetings:*

THE PRESIDENT

THE RECORDING SECRETARY

LEONARD CARMICHAEL      GEORGE SCATCHARD

SAMUEL H. CROSS      FREDERICK K. MORRIS

The Corresponding Secretary announced that the following had been elected members of the Academy:

#### FELLOWS

##### CLASS I

*Section 1.* Otto Struve, Williams Bay, Wis.

*Section 2.* Francis Birch, Cambridge

*Section 3.* Samuel Cornette Collins, Cambridge

*Section 4.* Wilmer Lanier Barrow, Concord

##### CLASS II

*Section 1.* Russell Gibson, Belmont

*Section 2.* William Ralph Maxon, Washington, D. C.

*Section 3.* Hermann Joseph Muller, Amherst

*Section 4.* William Irving Clark, Worcester  
Samuel Albert Levine, Newton Centre

##### CLASS III

*Section 3.* Howard Sylvester Ellis, Berkeley, Cal.

Wassily W. Leontief, Cambridge

William Andrew Paton, Ann Arbor,  
Mich.

Paul Anthony Samuelson, Cambridge

*Section 4.* Donald Kirk David, Winchester

Daniel L. Marsh, Boston

Roger Sherman Greene, Worcester

CLASS IV

*Section 1.* Richard Peter McKeon, Chicago, Ill.

*Section 2.* Henry Joel Cadbury, Cambridge

*Section 4.* John Nash Douglas Bush, Cambridge

Otto Kinkeldey, Ithaca, N. Y.

Carl Sandburg, Harbert, Mich.

FOREIGN HONORARY MEMBER

CLASS II

*Section 2.* Lorenzo R. Parodi, Buenos Aires,  
Argentina

The following communication was then presented:

Mark Graubard: "Morale for a Democratic Offensive."

An exhibit of specimens of extinct birds, loaned by the New England Museum of Natural History, was described by Mr. C. Russell Mason.

The meeting was dissolved at 10.30 P. M.

## PRESIDENTS OF THE ACADEMY

1780-1791	James Bowdoin
1791-1814	John Adams
1814-1820	Edward Augustus Holyoke
1820-1829	John Quincy Adams
1829-1838	Nathaniel Bowditch
1838-1839	James Jackson
1839-1846	John Pickering
1846-1863	Jacob Bigelow
1863-1873	Asa Gray
1873-1880	Charles Francis Adams
1880-1892	Joseph Lovering
1892-1894	Josiah Parsons Cooke
1894-1903	Alexander Agassiz
1903-1908	William Watson Goodwin
1908-1915	John Trowbridge
1915-1917	Henry Pickering Walcott
1917-1919	Charles Pickering Bowditch
1919-1921	Theodore William Richards
1921-1924	George Foot Moore
1924-1927	Theodore Lyman
1927-1931	Edwin Bidwell Wilson
1931-1933	Jeremiah Denis Matthias Ford
1933-1935	George Howard Parker
1935-1937	Roscoe Pound
1937-1939	Dugald Caleb Jackson
1939-	Harlow Shapley





# American Academy of Arts and Sciences.

## OFFICERS AND COMMITTEES FOR 1942-1943.

### PRESIDENT.

HARLOW SHAPLEY.

### VICE-PRESIDENTS.

#### Class I.

PERCY W. BRIDGMAN,

#### Class II.

S. BURT WOLBACH,

#### Class III.

SIDNEY B. FAY,

#### Class IV.

FRED N. ROBINSON.

### CORRESPONDING SECRETARY.

ABBOTT P. USHER.

### RECORDING SECRETARY.

HUDSON HOAGLAND.

### TREASURER.

HORACE S. FORD.

### LIBRARIAN.

FREDERICK H. PRATT.

### EDITOR.

ROBERT P. BLAKE.

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NORTON A. KENT,

BART J. BOK,

*Terms expire 1943.*

*Terms expire 1944.*

*Terms expire 1945.*

*Terms expire 1946.*

#### Class III.

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HENRY P. KENDALL,

EDWARD H. CHAMBERLIN,

EDWARD S. THURSTON,

*Terms expire 1943.*

*Terms expire 1944.*

*Terms expire 1945.*

*Terms expire 1946.*

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DAVID RAPPORT.

LOUIS J. GRATON.

#### Class IV.

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CHARLES H. TAYLOR.

SAMUEL H. CROSS.

EDGAR S. BRIGHTMAN.

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RALPH E. FREEMAN,

HENRY P. KENDALL,

JOHN F. EBERSOLE

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*THE PRESIDENT, ex officio,*

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ROBERT G. DODGE,

DUGALD C. JACKSON,

W. CAMERON FORBES.

### RUMFORD COMMITTEE.

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PERCY W. BRIDGMAN,

HARRY M. GOODWIN,

GEORGE R. HARRISON,

ROBERT B. LINDSAY.

**C. M. WARREN COMMITTEE.**

GREGORY P. BAXTER,  
WALTER L. JENNINGS,

FREDERICK G. KEYES, *Chairman*,  
REID HUNT,  
CHARLES A. KRAUS,

TENNEY L. DAVIS,  
GRINNELL JONES.

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JOSEPH H. BEALE, of Class III,  
ROBERT P. CASEY, of Class IV.

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THOMAS BARBOUR, of Class II,

FREDERICK H. PRATT, *Chairman*,

FRANCIS N. BALCH, of Class III,  
HENRY B. WASHBURN, of Class IV.

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ALEXANDER FORBES

**HOUSE COMMITTEE.**

ROBERT P. BIGLOW,

ERNEST F. LANGLEY, *Chairman*,  
WALTER E. CLARK,

H. ADDINGTON BRUCE.

**COMMITTEE ON BIOGRAPHICAL NOTICES.**

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ALFRED C. LANE,

HUDSON HOAGLAND, *Chairman*,  
JOSEPH H. BEALE,

SAMUEL E. MORISON,  
HERVEY W. SHIMER.

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THE PRESIDENT,  
THE RECORDING SECRETARY,  
LEONARD CARMICHAEL,    GEORGE SCATCHARD.    FREDERICK K. MORRIS,    SAMUEL H. CROSS.

# LIST

## OF THE

### FELLOWS AND FOREIGN HONORARY MEMBERS

(Corrected to September 1, 1942)

#### FELLOWS—796

(Number limited to eight hundred)

*The year of election is indicated in the left margin, the century being omitted; thus 21 means 1921, 92 means 1892. When a Fellow resigned and was re-elected, the year of re-election is indicated in the ordinary way, the year of election is enclosed in square brackets. The year of election of an Associate, now a Fellow, is indicated by round brackets.*

#### CLASS I—MATHEMATICAL AND PHYSICAL SCIENCES—213

##### SECTION I—Mathematics and Astronomy—48

- 21 Charles Greeley Abbot . . . . . Washington, D. C.
- 32 Clarence Raymond Adams . . . . . Providence, R. I.
- 22 Walter Sydney Adams . . . . . Pasadena, Cal.
- 12 George Russell Agassiz . . . . . Boston
- 17 Raymond Clare Archibald . . . . . Providence, R. I.
- 32 Albert Arnold Bennett . . . . . Providence, R. I.
- 13 George David Birkhoff . . . . . Cambridge
- 35 Gilbert Ames Bliss . . . . . Chicago, Ill.
- 39 Bart Jan Bok . . . . . Lexington
- 13 Julian Lowell Coolidge . . . . . Cambridge
- 15 Leonard Eugene Dickson . . . . . Chicago, Ill.
- 33 Jesse Douglas . . . . . Brooklyn, N. Y.
- 38 John Charles Duncan . . . . . Wellesley
- 34 Griffith Conrad Evans . . . . . Berkeley, Cal.
- 15 Philip Fox . . . . . Evanston, Ill.
- 30 Philip Franklin . . . . . Belmont
- 32 Einar Hille . . . . . New Haven, Conn.
- 15 Frank Lauren Hitchcock . . . . . Belmont
- 13 Edward Vermilye Huntington . . . . . Cambridge
- 15 Dunham Jackson . . . . . Minneapolis, Minn.
- 38 E[li]vin Morton Jellinek . . . . . New York, N. Y.
- 15 Carl Otto Lampland . . . . . Flagstaff, Ariz.
- 25 Willem Jacob Luyten . . . . . Minneapolis, Minn.
- 34 Donald Howard Menzel . . . . . Cambridge
- 19 George Abram Miller . . . . . Urbana, Ill.
- 24 John Anthony Miller . . . . . Wallingford, Pa.
- 23 Samuel Alfred Mitchell . . . . . University, Va.
- 29 Marston Morse . . . . . Princeton, N. J.
- 19 Forest Ray Moulton . . . . . Washington, D. C.
- 18 Henry Bayard Phillips . . . . . Belmont
- 96 Charles Lane Poor . . . . . New York, N. Y.
- 14 Roland George Dwight Richardson,  
Providence, R. I.
- 21 Henry Norris Russell . . . . . Princeton, N. J.

- 21 Frank Schlesinger . . . . . New Haven, Conn.
- 20 Harlow Shapley . . . . . Cambridge
- 09 Vesto Melvin Slipher . . . . . Flagstaff, Ariz.
- 17 Frederick Slocum . . . . . Middletown, Conn.
- 19 Virgil Snyder . . . . . Ithaca, N. Y.
- 21 Joel Stebbins . . . . . Madison, Wis.
- 27 Harlan True Stetson . . . . . Needham
- 30 Dirk Jan Struik . . . . . Belmont
- 42 Otto Struve . . . . . Williams Bay, Wis.
- 28 Jacob David Tamarkin . . . . . Providence, R. I.
- 23 Oswald Veblen . . . . . Princeton, N. J.
- 29 Joseph Leonard Walsh . . . . . Cambridge
- 41 Fred Lawrence Whipple . . . . . Cambridge
- 25 Alfred North Whitehead . . . . . Cambridge
- 32 David Vernon Widder . . . . . Cambridge

##### CLASS I, SECTION II—Physics—60

- 28 Adelbert Ames, Jr. . . . . Hanover, N. H.
- 11 Joseph Sweetman Ames . . . . . Baltimore, Md.
- 37 Kenneth Tompkins Bainbridge . . . . . Cambridge
- 21 Samuel Jackson Barnett . . . . . Los Angeles, Cal.
- 42 Francis Birch . . . . . Cambridge
- 12 Percy Williams Bridgman . . . . . Cambridge
- 39 Lyman James Briggs . . . . . Washington, D. C.
- 26 Walter Guyton Cady . . . . . Middletown, Conn.
- 03 George Ashley Campbell . . . . . Upper Montclair, N. J.
- 21 Leslie Lyle Campbell . . . . . Lexington, Va.
- 16 Emory Leon Chaffee . . . . . Belmont
- 28 Arthur Holly Compton . . . . . Chicago, Ill.
- 31 Karl Taylor Compton . . . . . Cambridge
- 12 Daniel Frost Comstock . . . . . Lincoln
- 15 William David Coolidge . . . . . Schenectady, N. Y.
- 34 Franz Hazlett Crawford . . . . . Williamstown
- 13 Henry Crew . . . . . Evanston, Ill.
- 11 Harvey Nathaniel Davis . . . . . Hoboken, N. J.
- 29 Clinton Joseph Davisson . . . . . New York, N. Y.
- 12 Arthur Louis Day . . . . . Bethesda, Md.
- 14 William Johnson Drisko . . . . . Addison, Me.

- 01 Alexander Wilmer Duff..... Worcester  
 09 Arthur Woolsey Ewell..... Worcester  
 39 Harry Edward Farnsworth..... Providence, R. I.  
 97 Harry Manley Goodwin..... Brookline  
 29 Arthur Cobb Hardy..... Wellesley  
 31 George Russell Harrison..... Belmont  
 95 Hammond Vinton Hayes..... Boston  
 14 John Charles Hubbard..... Baltimore, Md.  
 17 Gordon Ferrie Hull..... Hanover, N. H.  
 40 Frederick Vinton Hunt..... Belmont  
 14 James Edmund Ives..... Washington, D. C.  
 22 Edwin Crawford Kemble..... Cambridge  
 13 Norton Adams Kent..... Newton Center  
 37 Ernest Orlando Lawrence..... Berkeley, Cal.  
 99 Henry Lefavour..... Boston  
 31 Robert Bruce Lindsay..... Providence, R. I.  
 01 Theodore Lyman..... Brookline  
 34 Louis Williams McKeethan..... New Haven, Conn.  
 14 Ernest George Merritt..... Ithaca, N. Y.  
 14 Robert Andrews Millikan..... Pasadena, Cal.  
 34 Harry Rowe Mimno..... East Lexington  
 34 Philip McCord Morse..... Belmont  
 31 Otto Oldenberg..... Cambridge  
 34 Leigh Page..... New Haven, Conn.  
 07 George Washington Pierce..... Cambridge  
 41 Isidor Isaac Rabi..... New York, N. Y.  
 27 John Clarke Slater..... Cambridge  
 37 George William Stewart..... Iowa City, Ia.  
 96 John Stone Stone..... San Diego, Cal.  
 37 Jabez Curry Street..... Cambridge  
 12 Maurice deKay Thompson..... Brookline  
 28 Manuel Sandoval Vallarta..... Brookline  
 35 Robert Jenison Van de Graaff..... Belmont  
 34 John Hasbrouck Van Vleck..... Cambridge  
 35 Bertram Eugene Warren..... Cambridge  
 18 David Locke Webster..... Palo Alto, Cal.  
 11 Edwin Bidwell Wilson..... Medford  
 13 Robert Williams Wood..... Baltimore, Md.  
 17 John Zeleny..... New Haven, Conn.
- 15 George Shannon Forbes..... Cambridge  
 35 Louis Harris..... Cambridge  
 36 Albert Baird Hastings..... Cambridge  
 38 Robert Casad Hockett..... Concord  
 36 Ernest Hamlin Huntress..... Melrose Highlands  
 97 Walter Louis Jennings..... Cambridge  
 18 Grinnell Jones..... Cambridge  
 19 Frederick George Keyes..... Cambridge  
 33 George Bogdan Kistiakowsky..... Cambridge  
 15 Charles August Kraus..... Providence, R. I.  
 14 Arthur Becket Lamb..... Brookline  
 18 Irving Langmuir..... Schenectady, N. Y.  
 09 Gilbert Newton Lewis..... Berkeley, Cal.  
 15 Warren Kendall Lewis..... Newton  
 23 Duncan Arthur MacInnes..... New York, N. Y.  
 32 Kenneth Lamartine Mark..... Boston  
 41 Charles Edward Kenneth Mees..... Rochester, N. Y.  
 35 Nicholas Athanasius Milas..... Belmont  
 36 Avery Adrian Morton..... Watertown  
 19 Edward Mueller..... Cambridge  
 31 William Albert Noyes, Jr..... Rochester, N. Y.  
 14 Samuel Cate Prescott..... Brookline  
 39 Clifford Burrough Purves..... Cambridge  
 79 Robert Hallowell Richards..... Jamaica Plain  
 14 Martin André Rosanoff..... Pittsburgh, Pa.  
 28 George Scatchard..... Cambridge  
 32 Walter Cecil Schumb..... East Milton  
 15 Miles Standish Sherrill..... Brookline  
 20 Harry Monmouth Smith..... Brookline  
 34 Leighton Bruerton Smith..... Beverly  
 22 Richard Chace Tolman..... Pasadena, Cal.  
 38 Harold Clayton Urey..... Leonia, N. J.  
 41 Harry Boyer Weiser..... Houston, Tex.  
 39 Frank Clifford Whitmore..... State College, Pa.  
 11 Willis Rodney Whitney..... Schenectady, N. Y.  
 19 Robert Seaton Williams..... Belmont  
 34 David Elbridge Worrall..... Medford  
 41 Ralph Chillingworth Young..... Arlington

## CLASS I, SECTION III—Chemistry—56

- 26 Roger Adams..... Urbana, Ill.  
 13 Wilder Dwight Bancroft..... Ithaca, N. Y.  
 07 Gregory Paul Baxter..... Cambridge  
 29 James Alexander Beattie..... Belmont  
 19 Arthur Alphonzo Blanchard..... Brookline  
 14 Marston Taylor Bogert..... New York, N. Y.  
 36 Harold Simmons Booth..... Cleveland, O.  
 11 William Crowell Bray..... Berkeley, Cal.  
 38 Emile Monnin Chamot..... Ithaca, N. Y.  
 12 Russell Henry Chittenden..... New Haven, Conn.  
 41 George Whiteley Coggeshall..... Cambridge  
 42 Samuel Cornette Collins..... Cambridge  
 24 James Bryant Conant..... Cambridge  
 23 Tenney Lombard Davis..... Norwell  
 37 John Tileston Edsall..... Dedham  
 37 Gustavus John Esselen..... Swampscott  
 40 William Lloyd Evans..... Columbus, O.  
 33 Louis Frederick Fieser..... Belmont

## CLASS I, SECTION IV—Technology and Engineering—49

- 06 Comfort Avery Adams..... Philadelphia, Pa.  
 33 Harold Kilbrith Barrows..... Winchester  
 31 Charles Harold Berry..... Belmont  
 41 Edward Lindley Bowles..... Wellesley  
 25 Vannevar Bush..... Washington, D. C.  
 34 Otto Gustav Colbiornsen Dahl..... Brookline  
 34 Chester Laurens Dawes..... Cambridge  
 38 Alfred Victor de Forest..... Cambridge  
 34 Jacob Pieter Den Hartog..... Wellesley Hills  
 20 Theodore Harwood Dillon..... Washington, D. C.  
 41 Charles Stark Draper..... Newton  
 22 Gano Dunn..... New York, N. Y.  
 21 William Frederick Durand..... Palo Alto, Cal.  
 27 Gordon Maskew Fair..... Cambridge  
 19 Frederic Harold Fay..... Boston  
 32 Glennon Gilboy..... Lincoln  
 32 Albert Haertlein..... Watertown  
 40 Harold Locke Hazen..... Belmont  
 36 Murray Philip Horwood..... Newton Center

- 23 William Hovgaard.....Brooklyn, N. Y.  
 34 Jerome Clarke Hunsaker.....Boston  
 23 James Robertson Jack.....Watertown  
 11 Dugald Caleb Jackson.....Cambridge  
 30 Frank Baldwin Jewett.....New York, N. Y.  
 01 Lewis Jerome Johnson.....Cambridge  
 37 Joseph Henry Keenan.....Belmont  
 32 Ralph Restieaux Lawrence.....Belmont  
 23 William Henry Lawrence.....Jamaica Plain  
 38 John Moyes Lessells.....Brookline  
 21 Charles Thomas Main.....Winchester  
 12 Lionel Simeon Marks.....Cambridge  
 34 Edward Leyburn Moreland.....Wellesley  
 20 Frederick Law Olmsted.....Elkton, Md.  
 15 Charles Francis Park.....Taunton  
 28 Langdon Pearse.....Chicago, Ill.  
 13 Harold Pender.....Philadelphia, Pa.  
 30 Greenleaf Whittier Pickard.....Newton Center  
 41 Reinhold Rüdenberg.....Belmont  
 30 George Edmond Russell.....Bedford  
 01 Henry Lloyd Smyth.....Windsor, Vt.  
 39 C. Richard Soderberg.....Weston  
 14 Charles Milton Spofford.....Boston  
 28 John F. Stevens.....Baltimore, Md.  
 23 Edward Pearson Warner.....New York, N. Y.  
 37 Harald Malcolm Westergaard.....Belmont  
 27 Robert Spurr Weston.....Brookline  
 15 Joseph Ruggles Worcester.....Waltham  
 40 John Wulff.....Cambridge  
 41 Vladimir Kosma Zworykin.....Camden, N. J.

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SCIENCE—211

SECTION I—*Geology, Mineralogy, and Physics of the  
Globe*—50

- 15 Wallace Walter Atwood.....Worcester  
 41 Alan Mara Bateman.....New Haven, Conn.  
 38 Marland Pratt Billings.....Wellesley  
 21 Norman Levi Bowen.....Chicago, Ill.  
 16 Isaiah Bowman.....Baltimore, Md.  
 33 Charles Franklin Brooks.....Milton  
 29 Kirk Bryan.....Cambridge  
 33 Frank Morton Carpenter.....Lexington  
 93 Henry Helm Clayton.....Canton  
 09 Reginald Aldworth Daly.....Cambridge  
 34 Sterling Price Fergusson.....Milton  
 42 Russell Gibson.....Belmont  
 17 James Walter Goldthwait.....Hanover, N. H.  
 14 Louis Caryl Graton.....Cambridge  
 17 Herbert Ernest Gregory.....Honolulu, T. H.  
 21 William Jackson Humphreys.....Washington, D. C.  
 16 Ellsworth Huntington.....New Haven, Conn.  
 95 Robert Tracy Jackson.....Peterborough, N. H.  
 02 Thomas Augustus Jaggard.....Honolulu, T. H.  
 08 Douglas Wilson Johnson.....New York, N. Y.  
 21 Arthur Keith.....Washington, D. C.  
 10 Alfred Church Lane.....Cambridge  
 25 Esper Signius Larsen, Jr.....Belmont  
 15 Andrew Cowper Lawson.....Berkeley, Cal.

- 16 Charles Kenneth Leith.....Madison, Wis.  
 17 Alexander George McAdie.....Hampton, Va.  
 31 George Francis McEwen.....La Jolla, Cal.  
 27 Donald Hamilton McLaughlin.....Berkeley, Cal.  
 25 Kirtley Fletcher Mather.....Newton Center  
 26 Edward Bennett Mathews.....Baltimore, Md.  
 35 Warren Judson Mead.....Cambridge  
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 17 William John Miller.....Los Angeles, Cal.  
 32 Frederick Kuhne Morris.....Cambridge  
 34 Walter Harry Newhouse.....Medford  
 17 Percy Edward Raymond.....Lexington  
 22 Austin Flint Rogers.....Palo Alto, Cal.  
 34 Carl-Gustaf Arvid Rossby.....Washington, D. C.  
 15 Robert Wilcox Sayles.....Chestnut Hill  
 19 Waldemar Theodore Schaller.....Washington, D. C.  
 15 Charles Schuchert.....New Haven, Conn.  
 12 William Berryman Scott.....Princeton, N. J.  
 11 Hervey Woodburn Shimer.....Hingham  
 41 Chester Stock.....Pasadena, Cal.  
 17 Thomas Wayland Vaughan.....Washington, D. C.  
 08 Charles Hyde Warren.....New Haven, Conn.  
 14 Herbert Percy Whitlock.....New York, N. Y.  
 35 Derwent Stainthorpe Whittlesey.....Cambridge  
 15 Bailey Willis.....Palo Alto, Cal.  
 15 Frederick Eugene Wright.....Washington, D. C.

CLASS II, SECTION II—*Botany*—37

- 30 LeRoy Abrams.....Stanford University, Cal  
 11 Oakes Ames.....North Easton  
 34 Edgar Anderson.....St. Louis, Mo.  
 15 Irving Widmer Bailey.....Cambridge  
 00 Liberty Hyde Bailey.....Ithaca, N. Y.  
 21 Edward Wilber Berry.....Baltimore, Md.  
 40 Albert Francis Blakeslee.....Cold Spring Harbor, N. Y.  
 98 Douglas Houghton Campbell.....Palo Alto, Cal.  
 16 Bradley Moore Davis.....Ann Arbor, Mich.  
 35 Bernard Ogilvie Dodge.....New York, N. Y.  
 41 Arthur Johnson Eames.....Ithaca, N. Y.  
 21 Rollins Adams Emerson.....Ithaca, N. Y.  
 12 Alexander William Evans.....New Haven, Conn.  
 29 Joseph Horace Faull.....Cambridge  
 00 Merritt Lyndon Fernald.....Cambridge  
 11 Robert Almer Harper.....New York, N. Y.  
 98 John George Jack.....East Walpole  
 28 Willis Linn Jepson.....Berkeley, Cal.  
 27 Ivan Murray Johnston.....Brookline  
 34 Donald Forsha Jones.....New Haven, Conn.  
 14 Burton Edward Livingston.....Riderwood, Md.  
 40 Paul Christoph Mangelsdorf.....Cambridge  
 42 William Ralph Maxon.....Washington, D. C.  
 21 Elmer Drew Merrill.....Jamaica Plain  
 10 Winthrop John Vanleuven Osterhout.....New York, N. Y.  
 27 George James Peirce.....Palo Alto, Cal.  
 14 Alfred Rehder.....Jamaica Plain  
 30 Karl Sax.....Jamaica Plain  
 16 William Albert Setchell.....Berkeley, Cal.

34 Edmund Ware Sinnott . . . . . New Haven Conn.  
 34 Gilbert Morgan Smith . . . . . Stanford University, Cal.  
 23 Elvin Charles Stakman . . . . . St. Paul, Minn.  
 38 Kenneth Vivian Thimann . . . . . Cambridge  
 92 William Trelease . . . . . Urbana, Ill.  
 31 Charles Alfred Weatherby . . . . . Cambridge  
 22 William Henry Weston, Jr. . . . . Cambridge  
 32 Ralph Hartley Wetmore . . . . . Belmont

CLASS II, SECTION III—*Zoology and Physiology*—67

22 Nathan Banks . . . . . Jamaica Plain  
 16 Thomas Barbour . . . . . Boston  
 33 Philip Bard . . . . . Baltimore, Md.  
 09 Francis Gano Benedict . . . . . Machiasport, Me.  
 11 Henry Bryant Bigelow . . . . . Concord  
 14 Robert Payne Bigelow . . . . . Brookline  
 35 Charles Henry Blake . . . . . Lincoln  
 20 William T. Bovie . . . . . Waterville, Me.  
 24 Edward Allen Boyden . . . . . Minneapolis, Minn.  
 16 John Lewis Bremer . . . . . Boston  
 15 Charles Thomas Brues . . . . . Newtonville  
 28 John Wymond Miller Bunker . . . . . Belmont  
 06 Walter Bradford Cannon . . . . . Cambridge  
 22 Thorne Martin Carpenter . . . . . Boston  
 00 William Ernest Castle . . . . . Berkeley, Cal.  
 29 Lemuel Roscoe Cleveland . . . . . Jamaica Plain  
 26 Edwin Joseph Cohn . . . . . Cambridge  
 14 Edwin Grant Conklin . . . . . Princeton, N. J.  
 23 Manton Copeland . . . . . Brunswick, Me.  
 27 William John Crozier . . . . . Cambridge  
 17 Joseph Augustine Cushman . . . . . Sharon  
 35 [John] Franklin Daniel . . . . . Berkeley, Cal.  
 95 Charles Benedict Davenport . . . . . Cold Spring Harbor  
 29 Hallowell Davis . . . . . Belmont  
 33 Alden Benjamin Dawson . . . . . Belmont  
 25 Samuel Randall Detwiler . . . . . New York, N. Y.  
 25 Herbert McLean Evans . . . . . Berkeley, Cal.  
 34 Cyrus Hartwell Fiske . . . . . Belmont  
 15 Alexander Forbes . . . . . Milton  
 34 John Farquhar Fulton . . . . . New Haven, Conn.  
 31 William King Gregory . . . . . New York, N. Y.  
 36 Frederick Lee Hisaw . . . . . Cambridge  
 29 Leigh Hoadley . . . . . Cambridge  
 34 Hudson Hoagland . . . . . Worcester  
 24 Samuel Jackson Holmes . . . . . Berkeley, Cal.  
 28 Roy Graham Hoskins . . . . . Waban  
 13 Leland Ossian Howard . . . . . Washington, D. C.  
 14 Herbert Spencer Jennings . . . . . Baltimore, Md.  
 13 Charles Atwood Kofoid . . . . . Berkeley, Cal.  
 16 Frederic Thomas Lewis . . . . . Waban  
 33 Frank Rattray Lillie . . . . . Chicago, Ill.  
 14 Ralph Stayner Lillie . . . . . Chicago, Ill.  
 17 Richard Swann Lull . . . . . New Haven, Conn.  
 84 Edward Laurens Mark . . . . . Cambridge  
 15 Albert Davis Mead . . . . . Providence, R. I.  
 27 Axel Leonard Melander . . . . . New York, N. Y.  
 35 Karl Friedrich Meyer . . . . . San Francisco, Cal.  
 21 Gerrit Smith Miller . . . . . Washington, D. C.  
 28 Thomas Hunt Morgan . . . . . Pasadena, Cal.

42 Hermann Joseph Muller . . . . . Amherst  
 95 George Howard Parker . . . . . Cambridge  
 21 Henry Augustus Pilsbry . . . . . Philadelphia, Pa.  
 39 Gregory Pincus . . . . . Worcester  
 27 Frederick Haven Pratt . . . . . Wellesley Hills  
 09 Herbert Wilbur Rand . . . . . Belmont  
 32 David Rapport . . . . . Cambridge  
 23 Alfred Clarence Redfield . . . . . Milton  
 34 Alfred Newton Richards . . . . . Philadelphia, Pa.  
 34 Oscar Riddle . . . . . Cold Spring Harbor, N. Y.  
 13 William Emerson Ritter . . . . . Berkeley, Cal.  
 37 Alfred Sherwood Romer . . . . . Cambridge  
 39 Arturo Rosenblueth . . . . . Watertown  
 25 Alexander Grant Ruthven . . . . . Ann Arbor, Mich.  
 41 Francis Otto Schmitt . . . . . Belmont  
 15 Arthur Wisswald Weyssse . . . . . Boston  
 38 George Bernays Wislocki . . . . . Milton  
 33 Jeffries Wyman, Jr. . . . . Chestnut Hill

CLASS II, SECTION IV—*Medicine and Surgery*—57

41 Fuller Albright . . . . . Brookline  
 32 Joseph Charles Aub . . . . . Belmont  
 36 Oswald Theodore Avery . . . . . New York, N. Y.  
 29 James Bourne Ayer . . . . . Milton  
 (28) 32 Franklin Greene Balch . . . . . Boston  
 41 Walter Bauer . . . . . Waban  
 31 George Blumer . . . . . New Haven, Conn.  
 36 Charles Sidney Burwell . . . . . Brookline  
 21 Charles Macfie Campbell . . . . . Cambridge  
 19 Alexis Carrel . . . . . New York, N. Y.  
 31 William Bosworth Castle . . . . . Brookline  
 30 David Cheever . . . . . Boston  
 13 Henry Asbury Christian . . . . . Brookline  
 42 William Irving Clark . . . . . Worcester  
 21 Rufus Cole . . . . . Mount Kisco, N. Y.  
 32 Elliott Carr Cutler . . . . . Brookline  
 31 Eugene Floyd DuBois . . . . . New York, N. Y.  
 33 Reginald Fitz . . . . . Brookline  
 11 Simon Flexner . . . . . New York, N. Y.  
 27 James Lawder Gamble . . . . . Brookline  
 22 Joseph Lincoln Goodale . . . . . Ipswich  
 21 Ross Granville Harrison . . . . . New Haven, Conn.  
 27 Percy Rogers Howe . . . . . Belmont  
 21 William Henry Howell . . . . . Baltimore, Md.  
 33 Edgar Erskine Hume . . . . . Carlisle, Pa.  
 15 Reid Hunt . . . . . Boston  
 34 Henry Jackson, Jr. . . . . Chestnut Hill  
 12 Elliott Proctor Joslin . . . . . Boston  
 23 Roger Irving Lee . . . . . Brookline  
 42 Samuel Albert Levine . . . . . Newton Center  
 29 Edwin Allen Locke . . . . . Williamstown  
 28 Warfield Theobald Longcope . . . . . Baltimore, Md.  
 32 Fred Bates Lund . . . . . Newton  
 40 William de Berniere MacNider . . . . . Chapel Hill, N. C.  
 34 Leroy Matthew Simpson Miner . . . . . Newtonville  
 26 George Richards Minot . . . . . Brookline  
 41 Alan Richards Moritz . . . . . Waban  
 28 William Lorenzo Moss . . . . . Athens, Ga.  
 28 John Howard Mueller . . . . . West Roxbury



25 Robert Bayley Osgood.....Boston  
 27 Walter Walker Palmer.....New York, N. Y.  
 27 Joseph Hershey Pratt.....Boston  
 35 Tracy Jackson Putnam.....New York, N. Y.  
 34 William Carter Quinby.....Brookline  
 34 Arthur Hiler Ruggles.....Providence, R. I.  
 39 Frederick Fuller Russell.....Brookline  
 39 William Thomas Salter.....New Haven, Conn.  
 27 Andrew Watson Sellards.....Boston  
 33 George Cheever Shattuck.....Brookline  
 30 Torald Hermann Sollmann.....Cleveland, O.  
 14 Richard Pearson Strong.....Boston  
 30 Fritz Bradley Talbot.....Brookline  
 14 Ernest Edward Tytzer.....Wakefield  
 14 Frederick Herman Verhoeff.....Brookline  
 27 Joseph Treloar Wearn.....Cleveland, Ohio  
 40 Paul Dudley White.....Brookline  
 12 Simeon Burt Wolbach.....South Sudbury

## CLASS III—THE SOCIAL ARTS—174

SECTION I—*Jurisprudence*—41

(24) 32 Francis Noyes Balch.....Jamaica Plain  
 38 Henry Moore Bates.....Ann Arbor, Mich.  
 06 Joseph Henry Beale.....Cambridge  
 36 Stoughton Bell.....Cambridge  
 36 Harry Augustus Bigelow.....Chicago, Ill.  
 36 Wilfred Bolster.....Wellesley  
 36 Claude Raymond Branch.....Providence, R. I.  
 33 John Dickinson.....Philadelphia, Pa.  
 38 Robert Gray Dodge.....Boston  
 31 Fred Tarbell Field.....Newton  
 39 Herbert Funk Goodrich.....Philadelphia, Pa.  
 33 Theodore Francis Green.....Providence, R. I.  
 38 Frank Washburn Grinnell.....Boston  
 41 Erwin Nathaniel Griswold.....Belmont  
 39 John Loomer Hall.....Boston  
 39 Augustus Noble Hand.....New York, N. Y.  
 33 Learned Hand.....New York, N. Y.  
 39 Albert James Harno.....Urbana, Ill.  
 18 Charles Evans Hughes.....Washington, D. C.  
 38 Melvin Maynard Johnson.....Brookline  
 38 James McCauley Landis.....Cambridge  
 32 Sayre Macneil.....Azusa, Cal.  
 32 Calvert Magruder.....Cambridge  
 31 William DeWitt Mitchell.....New York, N. Y.  
 31 Edmund Morris Morgan.....Arlington  
 36 Henry Parkman, Jr.....Boston  
 39 Robert Porter Patterson.....Washington, D. C.  
 01 George Wharton Pepper.....Philadelphia, Pa.  
 11 Roscoe Pound.....Watertown  
 38 William Morton Prest.....Boston  
 36 Stanley Elroy Qua.....Lowell  
 32 Francis Bowes Sayre.....Washington, D. C.  
 21 Austin Wakeman Scott.....Cambridge  
 35 James Brown Scott.....Washington, D. C.  
 36 Sidney Post Simpson.....Cambridge  
 33 Harlan Fiske Stone.....Washington, D. C.  
 39 Thomas Walter Swan.....New York, N. Y.

32 Edward Sampson Thurston.....Cambridge  
 38 Bentley Wirt Warren.....Boston  
 37 Joseph Warren.....Brookline  
 (28) 32 Edmund Allen Whitman.....Cambridge

CLASS III, SECTION II—*Government, International Law, and Diplomacy*—28

36 Howard Landis Bevis.....Columbus, O.  
 33 Edwin Montefiore Borchard.....New Haven, Conn.  
 40 Robert Granville Caldwell.....Belmont  
 32 William Richards Castle, Jr.....Washington, D. C.  
 32 Joseph Perkins Chamberlain.....New York, N. Y.  
 33 Robert Treat Crane.....New York, N. Y.  
 35 Tyler Dennett.....Hague, N. Y.  
 31 Sidney Bradshaw Fay.....Cambridge  
 27 William Cameron Forbes.....Norwood  
 34 Edgar Stephenson Furniss.....New Haven, Conn.  
 32 Joseph Clark Grew.....Hancock, N. H.  
 35 Charles Grove Haines.....Los Angeles, Cal.  
 16 Albert Bushnell Hart.....Cambridge  
 41 Hajo Holborn.....New Haven, Conn.  
 27 Arthur Norman Holcombe.....Cambridge  
 31 Manley Ottmer Hudson.....Cambridge  
 32 Philip Carryl Jessup.....New York, N. Y.  
 97 Abbott Lawrence Lowell.....Boston  
 32 Charles Edward Merriam.....Chicago, Ill.  
 19 John Bassett Moore.....New York, N. Y.  
 13 William Bennett Munro.....Pasadena, Cal.  
 41 Gaetano Salvemini.....Cambridge  
 40 Thomas Head Thomas.....Cambridge  
 27 Westel Woodbury Willoughby.....Washington, D. C.  
 32 William Franklin Willoughby.....Washington, D. C.  
 14 George Grafton Wilson.....Grafton, Vt.  
 27 Quincy Wright.....Chicago, Ill.  
 33 Henry Aaron Yeomans.....Cambridge

CLASS III, SECTION III—*Economics and Sociology*—69

36 James Waterhouse Angell.....New York, N. Y.  
 36 James Cummings Bonbright.....New York, N. Y.  
 33 Harold Hitchings Burbank.....Cambridge  
 36 Edward Hastings Chamberlin.....Cambridge  
 34 John Maurice Clark.....Westport, Conn.  
 28 Arthur Harrison Cole.....Cambridge  
 31 Melvin Thomas Copeland.....Cambridge  
 31 William Leonard Crum.....Cambridge  
 32 William James Cunningham.....Cambridge  
 34 Winthrop More Daniels.....Saybrook Point, Conn.  
 21 Clive Day.....New Haven, Conn.  
 13 Davis Rich Dewey.....Cambridge  
 32 Arthur Stone Dewing.....Newton  
 41 Carl Rupp Doering.....Cambridge  
 32 Wallace Brett Donham.....Boston  
 34 John Franklin Ebersole.....Belmont  
 42 Howard Sylvester Ellis.....Berkeley, Cal.  
 36 Fred Rogers Fairchild.....New Haven, Conn.  
 36 Frank Albert Fetter.....Princeton, N. J.  
 12 Irving Fisher.....New Haven, Conn.  
 31 James Ford.....Lincoln  
 34 Ralph Evans Freeman.....Cambridge  
 13 Edwin Francis Gay.....Pasadena, Cal.

- 33 Sheldon Glueck.....Cambridge  
 39 Gottfried Haberler.....Cambridge  
 34 Robert Murray Haig.....New York, N. Y.  
 41 Earl Jefferson Hamilton.....Durham, N. C.  
 32 Henry Wyman Holmes.....Cambridge  
 34 Edwin Walter Kemmerer.....Princeton, N. J.  
 34 Frank Hyneman Knight.....Chicago, Ill.  
 42 Wassily W. Leontief.....Cambridge  
 36 Roswell Cheney McCrea.....New York, N. Y.  
 34 Robert Morison MacIver.....New York, N. Y.  
 32 Walter Wallace McLaren.....Williamstown  
 36 Malcolm Perrine McNair.....Cambridge  
 32 Leon Carroll Marshall.....Chevy Chase, Md.  
 33 Edward Sagendorph Mason.....Cambridge  
 36 Elton Mayo.....Cambridge  
 34 Richard Stockton Meriam.....South Lincoln  
 34 Harry Alvin Millis.....Washington, D. C.  
 32 Frederick Cecil Mills.....New York, N. Y.  
 31 Wesley Clair Mitchell.....New York, N. Y.  
 34 Arthur Eli Monroe.....Cambridge  
 32 Harold Glenn Moulton.....Washington, D. C.  
 34 Edwin Griswold Nourse.....Washington, D. C.  
 32 William Fielding Ogburn.....Chicago, Ill.  
 33 Robert Ezra Park.....Nashville, Tenn.  
 42 William Andrew Paton.....Ann Arbor, Mich.  
 32 Leo S. Rowe.....Washington, D. C.  
 37 Clyde Orval Ruggles.....Cambridge  
 42 Paul Anthony Samuelson.....Cambridge  
 36 Thomas Henry Sanders.....Cambridge  
 33 Josef Alois Schumpeter.....Cambridge  
 32 Carl Snyder.....New York, N. Y.  
 31 Pitirim Alexandrovich Sorokin.....Winchester  
 41 Francis Trow Spaulding.....Cambridge  
 31 Oliver Mitchell Wentworth Sprague.....Cambridge  
 34 Frederick John Teggart.....Berkeley, Cal.  
 33 William Isaac Thomas.....Berkeley, Cal.  
 37 Harry Rudolph Tosdal.....Belmont  
 31 Donald Skeele Tucker.....Belmont  
 41 Robert Ulich.....Cambridge  
 33 Abbott Payson Usher.....Cambridge  
 34 Jacob Viner.....Chicago, Ill.  
 38 [Thomas] North Whitehead.....Cambridge  
 32 John Henry Williams.....Cambridge  
 36 Joseph Henry Willits.....New York, N. Y.  
 34 Leo Wolman.....New York, N. Y.  
 34 Carle Clark Zimmerman.....Winchester
- 35 Jerome Davis Greene.....Cambridge  
 42 Roger Sherman Greene.....Worcester  
 39 Henry Ingraham Harriman.....Newton Center  
 (28) 32 Edward Jackson Holmes.....Topsfield  
 41 Edward Godfrey Huber.....Waban  
 34 Henry Plimpton Kendall.....Sharon  
 32 Thomas William Lamont.....New York, N. Y.  
 39 Morris Evans Leeds.....Philadelphia, Pa.  
 34 Clarence Cook Little.....Bar Harbor, Me.  
 36 Dumas Malone.....Belmont  
 42 Daniel L. Marsh.....Boston  
 33 James Vance May.....Watertown  
 02 Herbert Putnam.....Washington, D. C.  
 (28) 32 Alfred Lawrence Ripley.....Andover  
 34 Erwin Haskell Schell.....Cambridge  
 38 Charles Seymour.....New Haven, Conn.  
 35 Henry Lee Shattuck.....Boston  
 37 Henry Southworth Shaw.....Exeter, N. H.  
 (28) 32 Payson Smith.....Orono, Me.  
 33 Albert Warren Stearns.....Billerica  
 36 Clair Elsmere Turner.....Arlington  
 (24) 32 Edwin Sibley Webster.....Brookline  
 41 Laurence Leathe Winship.....South Sudbury  
 (25) 32 Benjamin Loring Young.....Weston  
 39 Owen D. Young.....New York, N. Y.
- CLASS IV—THE HUMANITIES—198
- SECTION I—*Theology, Philosophy, and Psychology*—46
- 32 Michael Joseph Ahern.....Weston  
 33 Gordon Willard Allport.....Cambridge  
 32 James Rowland Angell.....Hamden, Conn.  
 33 John Gilbert Beebe-Center.....Swampscott  
 38 Julius Seelye Bixler.....Waterville, Me.  
 24 Edwin Garrigues Boring.....Cambridge  
 28 Edgar Sheffield Brightman.....Newton  
 31 Henry Addington Bruce.....Cambridge  
 32 Leonard Carmichael.....Tufts College  
 36 Robert Pierce Casey.....Providence, R. I.  
 33 [James] McKeen Cattell.....Garrison, N. Y.  
 28 Walter Feno Dearborn.....Cambridge  
 18 Edmund Burke Delabarre.....Providence, R. I.  
 33 Curt John Ducasse.....Providence, R. I.  
 38 James Everett Frame.....Princeton, N. J.  
 37 Clarence Henry Graham.....Providence, R. I.  
 30 William Henry Paine Hatch.....Cambridge  
 32 William Healy.....Boston  
 21 William Ernest Hocking.....Cambridge  
 35 Clark Leonard Hull.....New Haven, Conn.  
 33 Walter Samuel Hunter.....Providence, R. I.  
 28 Albert Cornelius Knudson.....Cambridge  
 32 Karl Spencer Lashley.....Orange Park, Fla.  
 29 Clarence Irving Lewis.....Lexington  
 33 Lee Sullivan McCollester.....Tufts College  
 42 Richard Peter McKeon.....Chicago, Ill.  
 10 Edward Caldwell Moore.....Cambridge  
 35 Henry Alexander Murray, Jr.....Boston  
 32 Arthur Darby Nock.....Cambridge  
 32 William Cardinal O'Connell.....Boston  
 28 Johnson O'Connor.....Boston
- CLASS III, SECTION IV—*Administration and Affairs*—36
- (25) 32 Charles Francis Adams.....Concord  
 39 Chester Irving Barnard.....Newark, N. J.  
 (25) 32 Charles Foster Batchelder.....Cambridge  
 41 Godfrey Lowell Cabot.....Boston  
 42 Donald Kirk David.....Winchester  
 38 Edmund Ezra Day.....Ithaca, N. Y.  
 41 Frederic Adrian Delano.....Washington, D. C.  
 32 Henry Sturgis Dennison.....Framingham  
 (28) 32 William Lusk Webster Field.....Milton  
 39 Ralph Edward Flanders.....Springfield, Vt.  
 38 Horace Sayford Ford.....Belmont



- 17 Charles Edwards Park.....Boston  
 33 Carroll Cornelius Pratt.....New Brunswick, N. J.  
 41 James Bissett Pratt.....Williamstown  
 30 James Hugh Ryan.....Omaha, Neb.  
 31 Henry Knox Sherrill.....Boston  
 27 Willard Learoyd Sperry.....Cambridge  
 29 Russell Henry Stafford.....Brookline  
 34 Lewis Madison Terman.....Stanford University, Cal.  
 34 Edward Lee Thorndike.....New York, N. Y.  
 37 Louis Leon Thurstone.....Chicago, Ill.  
 28 Henry Bradford Washburn.....Cambridge  
 17 John Broadus Watson.....New York, N. Y.  
 33 Frederic Lyman Wells.....Newton Highlands  
 35 Robert Sessions Woodworth.....New York, N. Y.  
 15 Robert Mearns Yerkes.....New Haven, Conn.

CLASS IV, SECTION II—*History, Archaeology, and  
 Anthropology*—41

- 18 Charles McLean Andrews.....New Haven, Conn.  
 41 Warren Ortman Ault.....Waban  
 28 James Phinney Baxter, 3d.....Williamstown  
 23 Carl Lotus Becker.....Ithaca, N. Y.  
 27 Robert Pierpont Blake.....Cambridge  
 12 Franz Boas.....Grantwood, N. J.  
 39 Crane Brinton.....Cambridge  
 (25) 32 William Brooks Cabot.....Boston  
 34 Clarence Gordon Campbell.....New York, N. Y.  
 12 George Henry Chase.....Cambridge  
 21 Max Farrand.....Bar Harbor, Me.  
 21 William Scott Ferguson.....Cambridge  
 38 Allyn Bailey Forbes.....Cambridge  
 33 Henry Thatcher Fowler.....Harmony, R. I.  
 38 Claude Moore Fuess.....Andover  
 18 Everts Boutell Greene.....New York, N. Y.  
 14 Bert Hodge Hill.....Athens, Greece  
 27 Earnest Albert Hooton.....Cambridge  
 33 Halford Lancaster Hoskins.....Tufts College  
 15 Aleš Hrdlička.....Washington, D. C.  
 12 Alfred Louis Kroeber.....Berkeley, Cal.  
 15 Kirsopp Lake.....So. Pasadena, Cal.  
 22 George LaPiana.....Cambridge  
 32 Waldo Gifford Leland.....Washington, D. C.  
 41 William E. Lingelbach.....Philadelphia, Pa.  
 20 Charles Howard McIlwain.....Belmont  
 14 Roger Bigelow Merriman.....Cambridge  
 38 Stewart Mitchell.....Gloucester  
 15 Samuel Eliot Morison.....Boston  
 34 Robert Henry Pfeiffer.....Cambridge  
 34 David Moore Robinson.....Baltimore, Md.  
 23 Michael Ivanovich Rostovtzeff.....New Haven, Conn.  
 27 George Sartan.....Cambridge  
 32 Bernadotte Everly Schmitt.....Chicago, Ill.  
 36 Donald Scott.....Cambridge  
 34 Theodore Leslie Shear.....Princeton, N. J.  
 26 Herbert Joseph Spinden.....Brooklyn, N. Y.  
 32 Charles Holt Taylor.....Cambridge  
 11 Alfred Marston Tozzer.....Cambridge  
 39 Henry Rouse Viets.....Dedham  
 20 Clark Wissler.....New York, N. Y.

CLASS IV, SECTION III—*Philology*—59

- 31 Edward Cooke Armstrong.....Princeton, N. J.  
 33 William Nickerson Bates.....Philadelphia, Pa.  
 35 Charles Henry Beeson.....Chicago, Ill.  
 33 Campbell Bonner.....Ann Arbor, Mich.  
 35 Robert Johnson Bonner.....Chicago, Ill.  
 41 Giuseppe Antonio Borgese.....Chicago, Ill.  
 21 Carl Darling Buck.....Chicago, Ill.  
 18 Edward Capps.....Princeton, N. J.  
 20 Walter Eugene Clark.....Cambridge  
 32 Ronald Salmon Crane.....Chicago, Ill.  
 32 Morris William Croll.....Princeton, N. J.  
 31 Samuel Hazzard Cross.....Cambridge  
 20 Franklin Edgerton.....New Haven, Conn.  
 40 Serge Elisséeff.....Cambridge  
 21 Frank Edgar Farley.....Middletown, Conn.  
 14 Jeremiah Denis Mathias Ford.....Cambridge  
 30 James Geddes, Jr.....Brookline  
 16 Louis Herbert Gray.....New York, N. Y.  
 25 William Chase Greene.....Cambridge  
 13 Charles Burton Gulick.....Cambridge  
 19 Roy Kenneth Hack.....Cincinnati, Ohio  
 34 Austin Morris Harmon.....New Haven, Conn.  
 31 Raymond Dexter Havens.....Baltimore, Md.  
 38 Richmond Laurin Hawkins.....Cambridge  
 18 George Lincoln Hendrickson.....New Haven, Conn.  
 17 William Guild Howard.....Cambridge  
 15 Carl Newell Jackson.....Snowville, N. H.  
 40 Werner Wilhelm Jaeger.....Watertown  
 13 James Richard Jewett.....Cambridge  
 32 (Ralph) Hayward Keniston.....Ann Arbor, Mich.  
 34 Roland Grubb Kent.....Wynnewood, Pa.  
 33 Hans Kurath.....Providence, R. I.  
 39 Henry Carrington Lancaster.....Baltimore, Md.  
 32 Ernest Felix Langley.....Cambridge  
 33 Ivan Mortimer Linforth.....Berkeley, Cal.  
 11 Albert Matthews.....Boston  
 35 Benjamin Dean Meritt.....Princeton, N. J.  
 28 William Albert Nitze.....Chicago, Ill.  
 32 George Rapall Noyes.....Berkeley, Cal.  
 34 William Abbott Oldfather.....Urbana, Ill.  
 33 Howard Rollin Patch.....Northampton  
 32 Arthur Stanley Pease.....Cambridge  
 35 Henry Washington Prescott.....Chicago, Ill.  
 13 Edward Kennard Rand.....Cambridge  
 11 Fred Norris Robinson.....Cambridge  
 38 Hyder Edward Rollins.....Cambridge  
 31 Robert Kilburn Root.....Princeton, N. J.  
 35 Henry Arthur Sanders.....Ann Arbor, Mich.  
 18 Rudolph Schevill.....Berkeley, Cal.  
 32 Horatio Elwin Smith.....New York, N. Y.  
 40 Edgar Howard Sturtevant.....New Haven, Conn.  
 39 John Strong Perry Tatlock.....Berkeley, Cal.  
 32 William Thomson.....So. Lincoln  
 11 Charles Cutler Torrey.....New Haven, Conn.  
 33 George Benson Weston.....Cambridge  
 30 Ernest Hatch Wilkins.....Oberlin, Ohio  
 33 Harry Austryn Wolfson.....Cambridge  
 39 William Hoyt Worrell.....Ann Arbor, Mich.  
 33 Karl Young.....New Haven, Conn.

CLASS IV, SECTION IV—*The Fine Arts and  
Belles Lettres*—52

- |                                    |                       |                                     |                          |
|------------------------------------|-----------------------|-------------------------------------|--------------------------|
| 31 Stephen Vincent Benét.....      | New York, N. Y.       | 38 Joseph Hudnut.....               | Boston                   |
| 26 Frank Weston Benson.....        | Salem                 | 18 Archer Milton Huntington.....    | New York, N. Y.          |
| 32 (William) Welles Bosworth.....  | New York, N. Y.       | 31 Henry James.....                 | New York, N. Y.          |
| 42 John Nash Douglas Bush.....     | Cambridge             | 38 Howard Mumford Jones.....        | Cambridge                |
| 33 John Alden Carpenter.....       | Chicago, Ill.         | 42 Otto Kinkeldey.....              | Ithaca, N. Y.            |
| 32 Chalmers Dancy Clifton.....     | Westport, Conn.       | 33 Leo Rich Lewis.....              | Tufts College            |
| 32 Kenneth John Conant.....        | Cambridge             | 20 John Ellerton Lodge.....         | Washington, D. C.        |
| 34 Charles Jay Connick.....        | Newtonville           | 21 John Livingston Lowes.....       | Cambridge                |
| 29 Charles Townsend Copeland.....  | Cambridge             | 21 Charles Donagh Maginnis.....     | Brookline                |
| [17] 30 Ralph Adams Cram.....      | Boston                | 31 Paul Manship.....                | New York, N. Y.          |
| 34 Samuel Foster Damon.....        | Providence, R. I.     | 31 Daniel Gregory Mason.....        | New York, N. Y.          |
| 41 Archibald Thompson Davison..... | Lincoln               | 31 Frank Jewett Mather... ..        | Washington Crossing, Pa. |
| 32 George Harold Edgell.....       | Cambridge             | 31 Kenneth Ballard Murdock.....     | Cambridge                |
| 21 William Emerson.....            | Cambridge             | 14 William Allan Neilson.....       | Falls Village, Conn.     |
| 33 Carl Engel.....                 | New York, N. Y.       | 28 Curtis Hidden Page.....          | Gilmanton, N. H.         |
| 30 John Erskine.....               | New York, N. Y.       | 21 William Lyon Phelps.....         | New Haven, Conn.         |
| 10 Arthur Fairbanks.....           | Hanover, N. H.        | (24) 32 Anthony John Philpott.....  | Arlington                |
| 18 Edward Waldo Forbes.....        | Cambridge             | 41 Walter Hamor Piston, Jr.....     | Belmont                  |
| 31 Robert Frost.....               | South Shaftsbury, Vt. | 21 Chandler Rathfon Post.....       | Cambridge                |
| 27 Wallace Goodrich.....           | Boston                | 22 Paul Joseph Sachs.....           | Cambridge                |
| 36 William Clifford Heilman.....   | Cambridge             | 14 Ellery Sedgwick.....             | Boston                   |
| 29 Edward Burlingame Hill.....     | Cambridge             | 19 Henry Dwight Sedgwick.....       | Dedham                   |
| 31 Robert Silliman Hillyer.....    | Cambridge             | 33 David Stanley Smith.....         | Woodbridge, Conn.        |
| 27 Charles Hopkinson.....          | Manchester            | 39 Francis Henry Taylor.....        | New York, N. Y.          |
| 12 Mark Antony DeWolfe Howe.....   | Boston                | 39 Karl Ephraim Weston.....         | Williamstown             |
|                                    |                       | 38 Grenville Lindall Winthrop.....  | Lenox                    |
|                                    |                       | 22 Charles Henry Conrad Wright..... | Cambridge                |

## FOREIGN HONORARY MEMBERS—121

(Number limited to one hundred and thirty)

CLASS I—MATHEMATICAL AND PHYSICAL  
SCIENCES—27SECTION I—*Mathematics and Astronomy*—8

- 39 Arnaud Denjoy.....Paris  
 22 Sir Arthur Stanley Eddington Cambridge, England  
 34 Ronald Aylmer Fisher.....Harpenden, Herts  
 20 Jacques Salomon Hadamard.....Princeton, N. J.  
 21 Godfrey Harold Hardy.....Cambridge, England  
 27 Ejnar Hertzsprung.....Leyden  
 15 Charles Jean de la Vallée Poussin.....Louvain  
 29 Hermann Weyl.....Princeton, N. J.

CLASS I, SECTION II—*Physics*—6

- 29 Vilhelm Frimann Koren Bjerknes.....Oslo  
 24 Albert Einstein.....Princeton, N. J.  
 29 James Franck.....Chicago, Ill.  
 29 Abram F. Joffé.....Leningrad  
 28 Friedrich Paschen.....Charlottenburg  
 14 Max Planck.....Berlin

CLASS I, SECTION III—*Chemistry*—7

- 29 Johannes N. Brønsted.....Copenhagen  
 27 Peter Debye.....Ithaca, N. Y.  
 33 Jaroslav Heyrovsky.....Prague  
 33 Fritz Paneth.....Durham  
 38 Leopold Ruzicka.....Zürich  
 28 Nevil Vincent Sidgwick.....Oxford  
 29 Heinrich Wieland.....Munich

CLASS I, SECTION IV—*Technology and Engineering*—6

- 36 Edward Victor Appleton.....London  
 34 Luigi Lombardi.....Rome  
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 Jewett, F. B. F, I: 4  
 Jewett, J. R. F, IV: 3  
 Joffé, A. F. FHM, I: 2  
 Johnson, D. W. F, II: 1  
 Johnson, L. J. F, I: 4  
 Johnson, M. M. F, III: 1  
 Johnston, I. M. F, II: 2  
 Jones, D. F. F, II: 2  
 Jones, G. F, I: 3  
 Jones, H. M. F, IV: 4  
 Joslin, E. P. F, II: 4  
 Keenan, J. H. F, I: 4  
 Keith, Sir A. FHM, II: 4  
 Keith, A. F, II: 1  
 Kelsen, H. FHM, III: 1  
 Kemble, E. C. F, I: 2  
 Kemmerer, E. W. F, III: 3  
 Kendall, H. P. F, III: 4  
 Keniston, H. F, IV: 3  
 Kent, N. A. F, I: 2  
 Kent, R. G. F, IV: 3  
 Keyes, F. G. F, I: 3  
 Keynes, Baron. FHM, III: 3  
 Kinkeldey, O. F, IV: 4  
 Kistiakowsky, G. B. F, I: 3  
 Knight, F. H. F, III: 3  
 Knudson, A. C. F, IV: 1  
 Köhler, W. FHM, IV: 1  
 Kofoid, C. A. F, II: 3  
 Koussevitzky, S. FHM, IV: 4  
 Kraus, C. A. F, I: 3  
 Kretschmer, P. FHM, IV: 3  
 Kroeber, A. L. F, IV: 2  
 Krogh, A. FHM, II: 3  
 Kurath, H. F, IV: 3  
 Lake, K. F, IV: 2  
 Lamb, A. B. F, I: 3  
 Lamont, T. W. F, III: 4  
 Lampland, C. O. F, I: 1  
 Lancaster, H. C. F, IV: 3  
 Landis, J. M. F, III: 1  
 Lane, A. C. F, II: 1  
 Langley, E. F. F, IV: 3  
 Langmuir, I. F, I: 3  
 La Piana, G. F, IV: 2  
 Lapique, L. E. FHM, II: 3  
 Larsen, E. S. F, II: 1  
 Lashley, K. S. F, IV: 1  
 Lawrence, E. O. F, I: 2  
 Lawrence, R. R. F, I: 4  
 Lawrence, W. H. F, I: 4  
 Lawson, A. C. F, II: 1  
 Lee, R. I. F, II: 4  
 Leeds, M. E. F, III: 4  
 Lefavour, H. F, I: 2  
 Leith, C. K. F, II: 1  
 Leland, W. G. F, IV: 2  
 Leontief, W. W. F, III: 3  
 Lessells, J. M. F, I: 4  
 Levine, S. A. F, II: 4  
 Lewis, C. I. F, IV: 1  
 Lewis, F. T. F, II: 3  
 Lewis, G. N. F, I: 3  
 Lewis, L. R. F, IV: 4  
 Lewis, W. K. F, I: 3  
 Lillie, F. R. F, II: 3  
 Lillie, R. S. F, II: 3  
 Lindsay, R. B. F, I: 2  
 Linforth, I. M. F, IV: 3  
 Lingelbach, W. E. F, IV: 2  
 Little, C. C. F, III: 4



- Livingston, B. E. F, II: 2  
 Locke, E. A. F, II: 4  
 Lodge, J. E. F, IV: 4  
 Lombardi, L. FHM, I: 4  
 Longcope, W. T. F, II: 4  
 Lowell, A. L. F, III: 2  
 Lowes, J. L. F, IV: 4  
 Lull, R. S. F, II: 3  
 Lund, F. B. F, II: 4  
 Luyten, W. J. F, I: 1  
 Lyman, T. F, I: 2  
 McAdie, A. G. F, II: 1  
 McCollester, L. S. F, IV: 1  
 McCrear, R. C. F, III: 3  
 McEwen, G. F. F, II: 1  
 McIlwain, C. H. F, IV: 2  
 MacInnes, D. A. F, I: 3  
 MacIver, R. M. F, III: 3  
 McKeelhan, L. W. F, I: 2  
 McKeon, R. P. F, IV: 1  
 McLaren, W. W. F, III: 3  
 McLaughlin, D. H. F, II: 1  
 Macmillan, Lord. FHM, III: 1  
 McNair, M. P. F, III: 3  
 Macneil, S. F, III: 1  
 MacNider, W. de B. F, II: 4  
 Maginnis, C. D. F, IV: 4  
 Magruder, C. F, III: 1  
 Main, C. T. F, I: 4  
 Makarewicz, J. FHM, III: 1  
 Malone, D. F, III: 4  
 Mangelsdorf, P. C. F, II: 2  
 Manship, P. F, IV: 4  
 Margerie, E. de. FHM, II: 1  
 Mark, E. L. F, II: 3  
 Mark, K. L. F, I: 3  
 Marks, L. S. F, I: 4  
 Marsh, D. L. F, III: 4  
 Marshall, L. C. F, III: 3  
 Mason, D. G. F, IV: 4  
 Mason, E. S. F, III: 3  
 Mather, F. J. F, IV: 4  
 Mather, K. F. F, II: 1  
 Mathews, E. B. F, II: 1  
 Matthews, A. F, IV: 3  
 Maunier, R. FHM, III: 3  
 Maxon, W. R. F, II: 2  
 May, J. V. F, III: 4  
 Mayo, E. F, III: 3  
 Mazon, P. FHM, IV: 3  
 Mead, A. D. F, II: 3  
 Mead, W. J. F, II: 1  
 Mees, C. E. K. F, I: 3  
 Meinecke, F. FHM, IV: 2  
 Melander, A. L. F, II: 3  
 Menzel, D. H. F, I: 1  
 Meriam, R. S. F, III: 3  
 Meritt, B. D. F, IV: 3  
 Merriam, C. E. F, III: 2  
 Merriam, J. C. F, II: 1  
 Merrill, E. D. F, II: 2  
 Merriman, R. B. F, IV: 2  
 Merritt, E. G. F, I: 2  
 Meyer, K. F. F, II: 3  
 Milas, N. A. F, I: 3  
 Miller, G. A. F, I: 1  
 Miller, G. S. F, II: 3  
 Miller, J. A. F, I: 1  
 Miller, W. J. F, II: 1  
 Millikan, R. A. F, I: 2  
 Millis, H. A. F, III: 3  
 Mills, F. C. F, III: 3  
 Mimno, H. R. F, I: 2  
 Miner, L. M. S. F, II: 4  
 Minot, G. R. F, II: 4  
 Mitchell, S. F, IV: 2  
 Mitchell, S. A. F, I: 1  
 Mitchell, W. C. F, III: 3  
 Mitchell, W. DeW. F, III: 1  
 Miyabe, K. FHM, II: 2  
 Miyajima, M. FHM, II: 4  
 Molengraaff, G. A. F. FHM, II: 1  
 Monroe, A. E. F, III: 3  
 Moore, E. C. F, IV: 1  
 Moore, J. B. F, III: 2  
 Moreland, E. L. F, I: 4  
 Morgan, E. M. F, III: 1  
 Morgao, T. H. F, II: 3  
 Morison, S. E. F, IV: 2  
 Moritz, A. R. F, II: 4  
 Morris, F. K. F, II: 1  
 Morse, M. F, I: 1  
 Morse, P. M. F, I: 2  
 Morton, A. A. F, I: 3  
 Moss, W. L. F, II: 4  
 Moulton, F. R. F, I: 1  
 Moulton, H. G. F, III: 3  
 Mueller, E. F, I: 3  
 Mueller, J. H. F, II: 4  
 Muller, H. J. F, II: 3  
 Munro, W. B. F, III: 2  
 Murdock, K. B. F, IV: 4  
 Murray, G. FHM, IV: 4  
 Murray, H. A., Jr. F, IV: 1  
 Neilson, W. A. F, IV: 4  
 Newhouse, W. H. F, II: 1  
 Nilsson, M. P. FHM, IV: 2  
 Nitze, W. A. F, IV: 3  
 Nock, A. D. F, IV: 1  
 Nourse, E. G. F, III: 3  
 Noyes, G. R. F, IV: 3  
 Noyes, W. A., Jr. F, I: 3  
 O'Connell, W. H. F, IV: 1  
 O'Connor, J. F, IV: 1  
 Oertel, H. FHM, IV: 3  
 Ogburn, W. F. F, III: 3  
 Oldenberg, O. F, I: 2  
 Oldfather, W. A. F, IV: 3  
 Olmsted, F. L. F, I: 4  
 Osgood, R. B. F, II: 4  
 Osterhout, W. J. V. F, II: 2  
 Page, C. H. F, IV: 4  
 Page, L. F, I: 2  
 Palmer, W. W. F, II: 4  
 Paneth, F. FHM, I: 3  
 Park, C. E. F, IV: 1  
 Park, C. F. F, I: 4  
 Park, R. E. F, III: 3  
 Parker, G. H. F, II: 3  
 Parkman, H., Jr. F, III: 1  
 Parodi, L. R. FHM, II: 2  
 Paschen, F. FHM, I: 2  
 Patch, H. R. F, IV: 3  
 Paton, W. A. F, III: 3  
 Patterson, R. P. F, III: 1  
 Pearse, L. F, I: 4  
 Pease, A. S. F, IV: 3  
 Peers, E. A. FHM, IV: 4  
 Peirce, G. J. F, II: 2  
 Pender, H. F, I: 4  
 Pepper, G. W. F, III: 1  
 Pfeiffer, R. H. F, IV: 2  
 Phelps, W. L. F, IV: 4  
 Phillips, H. B. F, I: 1  
 Philpott, A. J. F, IV: 4  
 Pickard, G. W. F, I: 4  
 Pidal, R. M. FHM, IV: 3  
 Pierce, G. W. F, I: 2  
 Piéron, H. FHM, IV: 1  
 Pigou, A. C. FHM, III: 3  
 Pilsbry, H. A. F, II: 3  
 Pineus, G. F, II: 3  
 Piston, W. H. F, IV: 4  
 Planck, M. FHM, I: 2  
 Poor, C. L. F, I: 1  
 Post, C. R. F, IV: 4  
 Pound, R. F, III: 1  
 Prandtl, L. FHM, I: 4  
 Pratt, C. C. F, IV: 1  
 Pratt, F. H. F, II: 3  
 Pratt, J. B. F, IV: 1  
 Pratt, J. H. F, II: 4  
 Prescott, H. W. F, IV: 3  
 Prescott, S. C. F, I: 3  
 Prest, W. M. F, III: 1  
 Probst, E. FHM, I: 4  
 Purves, C. B. F, I: 2  
 Putnam, H. F, III: 4  
 Putnam, T. J. F, II: 4  
 Qua, S. E. F, III: 1  
 Quinby, W. C. F, II: 4  
 Rabaud, H. FHM, IV: 4  
 Rabi, I. I. F, I: 2  
 Rand, E. K. F, IV: 3  
 Rand, H. W. F, II: 3  
 Rapport, D. F, II: 3  
 Raymond, P. E. F, II: 1  
 Redfield, A. C. F, II: 3  
 Regan, C. T. FHM, II: 3  
 Rehder, A. F, II: 2

- Renner, O. FHM, II: 2  
 Richards, A. N. F, II: 3  
 Richards, R. H. F, I: 3  
 Richardson, R. G. D. F, I: 1  
 Riddle, O. F, II: 3  
 Ripley, A. L. F, III: 4  
 Rist, C. FHM, III: 3  
 Ritter, W. E. F, II: 3  
 Robinson, D. M. F, IV: 2  
 Robinson, F. N. F, IV: 3  
 Rogers, A. F. F, II: 1  
 Rollins, H. E. F, IV: 3  
 Romer, A. S. F, II: 3  
 Root, R. K. F, IV: 3  
 Rosanoff, M. A. F, I: 3  
 Rosenbluth, A. F, II: 4  
 Rossby, C. G. A. F, II: 1  
 Rostovtzeff, M. I. F, IV: 2  
 Rowe, L. S. F, III: 3  
 Rowntree, B. S. FHM, III: 4  
 R  denberg, R. F, I: 4  
 Ruggles, A. H. F, II: 4  
 Ruggles, O. C. F, III: 3  
 Russell, F. F. F, II: 4  
 Russell, G. E. F, I: 4  
 Russell, H. N. F, I: 1  
 Ruthven, A. G. F, II: 3  
 Ruzicka, L. FHM, I: 3  
 Ryan, J. H. F, IV: 1  
 Sachs, P. J. F, IV: 4  
 Salter, W. T. F, II: 4  
 Salvemini, G. F, III: 2  
 Samuelson, P. A. F, III: 3  
 Sanders, H. A. F, IV: 3  
 Sanders, T. H. F, III: 3  
 Sarton, G. F, IV: 2  
 Sax, K. F, II: 2  
 Sayles, R. W. F, II: 1  
 Sayre, F. B. F, III: 1  
 Scatchard, G. F, I: 3  
 Schaller, W. T. F, II: 1  
 Schell, E. H. F, III: 4  
 Schevill, R. F, IV: 3  
 Schlesinger, F. F, I: 1  
 Schmitt, B. E. F, IV: 2  
 Schmitt, F. O. F, II: 3  
 Schuchert, C. F, II: 1  
 Schumb, W. C. F, I: 3  
 Schumpeter, J. A. F, III: 3  
 Scott, A. W. F, III: 1  
 Scott, D. F, IV: 2  
 Scott, J. B. F, III: 1  
 Scott, W. B. F, II: 1  
 Sedgwick, E. F, IV: 4  
 Sedgwick, H. D. F, IV: 4  
 Sellards, A. W. F, II: 4  
 Setchell, W. A. F, II: 2  
 Seymour, C. F, III: 4  
 Shapley, H. F, I: 1  
 Shattuck, G. C. F, II: 4  
 Shattuck, H. L. F, III: 4  
 Shaw, H. S. F, III: 4  
 Shaw, Sir W. N. FHM, II: 1  
 Shear, T. L. F, IV: 2  
 Sherrill, H. K. F, IV: 1  
 Sherrill, M. S. F, I: 3  
 Sherrington, Sir C. S. FHM, II: 4  
 Shimer, H. W. F, II: 1  
 Sibelius, J. FHM, IV: 4  
 Sidgwick, N. V. FHM, I: 3  
 Simpson, S. P. F, III: 1  
 Sinnott, E. W. F, II: 2  
 Slater, J. C. F, I: 2  
 Slipher, V. M. F, I: 1  
 Slocum, F. F, I: 1  
 Smith, D. S. F, IV: 4  
 Smith, G. M. F, II: 2  
 Smith, H. E. F, IV: 3  
 Smith, H. M. F, I: 3  
 Smith, L. B. F, I: 3  
 Smith, P. F, III: 4  
 Smith, Sir W. W. FHM, II: 2  
 Smyth, H. L. F, I: 4  
 Snyder, C. F, III: 3  
 Snyder, V. F, I: 1  
 Soderberg, R. C. F, I: 4  
 Sollmann, T. H. F, II: 4  
 Sorokin, P. A. F, III: 3  
 Spaulding, F. T. F, III: 3  
 Sperry, W. L. F, IV: 1  
 Spinden, H. J. F, IV: 2  
 Spofford, C. M. F, I: 4  
 Sprague, O. M. W. F, III: 3  
 Stafford, R. H. F, IV: 1  
 Stakman, E. C. F, II: 2  
 Stammner, R. FHM, II: 1  
 Sterns, A. W. F, III: 4  
 Stebbins, J. F, I: 1  
 Stein, Sir A. FHM, IV: 2  
 Steinmetz, S. R. FHM, III: 3  
 Stetson, H. T. F, I: 1  
 Stevens, J. F. F, I: 4  
 Stewart, G. W. F, I: 2  
 Stock, C. F, II: 1  
 Stodola, A. FHM, I: 4  
 Stone, H. F. F, III: 1  
 Stone, J. S. F, I: 2  
 Stravinsky, I. FHM, IV: 4  
 Street, J. C. F, I: 2  
 Strong, R. P. F, II: 4  
 Struik, D. J. F, I: 1  
 Struve, O. F, I: 1  
 Struve, P. B. FHM, III: 3  
 Sturtevant, E. H. F, IV: 3  
 Swan, T. W. F, III: 1  
 Takayanagi, K. FHM, III: 1  
 Talbot, F. B. F, II: 4  
 Tamarkin, J. D. F, I: 1  
 Tatlock, J. S. P. F, IV: 3  
 Taylor, C. H. F, IV: 2  
 Taylor, F. H. F, IV: 4  
 Teggart, F. J. F, III: 3  
 Terman, L. M. F, IV: 1  
 Thimann, K. V. F, II: 2  
 Thomas, F. W. FHM, IV: 3  
 Thomas, T. H. F, III: 2  
 Thomas, W. I. F, III: 3  
 Thompson, Sir D'A. W. FHM, II: 3  
 Thompson, M. deK. F, I: 2  
 Thomson, W. F, IV: 3  
 Thorndike, E. L. F, IV: 1  
 Thurston, E. S. F, III: 1  
 Thurstone, L. L. F, IV: 1  
 Tolman, R. C. F, I: 3  
 Torrey, C. C. F, IV: 3  
 Tosdal, H. R. F, III: 3  
 Tozzer, A. M. F, IV: 2  
 Trelease, W. F, II: 2  
 Trevelyan, G. M. FHM, IV: 2  
 Tucker, D. S. F, III: 3  
 Turner, C. E. F, III: 4  
 Tyzzer, E. E. F, II: 4  
 Ulich, R. F, III: 3  
 Urey, H. C. F, I: 3  
 Usher, A. P. F, III: 3  
 Vallarta, M. S. F, I: 2  
 Vall  e Poussin, C. J. dela. FHM, I: 1  
 Van de Graaff, R. J. F, I: 2  
 Van Vleck, J. H. F, I: 2  
 Vaughan, T. W. F, II: 1  
 Veblen, O. F, I: 1  
 Vecchio, G. Del. FHM, III: 1  
 Verhoeff, F. H. F, II: 4  
 Viets, H. R. F, IV: 2  
 Vincent, J. H. FHM, II: 4  
 Viner, J. F, III: 3  
 Wagner, K. W. FHM, I: 4  
 Walsh, J. L. F, I: 1  
 Warner, E. P. F, I: 4  
 Warren, B. E. F, I: 2  
 Warren, B. W. F, III: 1  
 Warren, C. H. F, II: 1  
 Warren, J. F, III: 1  
 Washburn, H. B. F, IV: 1  
 Watson, J. B. F, IV: 1  
 Wearn, J. T. F, II: 4  
 Weatherby, C. A. F, II: 2  
 Webster, D. L. F, I: 2  
 Webster, E. S. F, III: 4  
 Weiser, H. B. F, I: 3  
 Wells, F. L. F, IV: 1  
 Westergaard, H. M. F, I: 4  
 Weston, G. B. F, IV: 3  
 Weston, K. E. F, IV: 4  
 Weston, R. S. F, I: 4  
 Weston, W. H., Jr. F, II: 2  
 Wetmore, R. H. F, II: 2  
 Weyl, H. FHM, I: 1  
 Weyss  , A. W. F, II: 3  
 Whipple, F. L. F, I: 1

White, P. D. F, II: 4  
Whitehead, A. N. F, I: 1  
Whitehead, T. N. F, III: 3  
Whitlock, H. P. F, II: 1  
Whitman, E. A. F, III: 1  
Whitmore, F. C. F, I: 3  
Whitney, W. R. F, I: 3  
Whittlesey, D. S. F, II: 1  
Widder, D. V. F, I: 1  
Wieland, H. FHM, I: 3  
Wilkins, E. H. F, IV: 3  
Williams, J. H. F, III: 3  
Williams, R. S. F, I: 3  
Willis, B. F, II: 1  
Willits, J. H. F, III: 3  
Willoughy, W. F. F, III: 2

Willoughby, W. W. F, III: 2  
Wilson, E. B. F, I: 2  
Wilson, G. G. F, III: 2  
Winship, L. L. F, III: 4  
Winthrop, G. L. F, IV: 4  
Wislocki, G. B. F, II: 3  
Wissler, C. F, IV: 2  
Wolbach, S. B. F, II: 4  
Wolfson, H. A. F, IV: 3  
Wolman, L. F, III: 3  
Wood, R. W. F, I: 2  
Woodworth, R. S. F, IV: 1  
Worcester, J. R. F, I: 4  
Worrall, D. E. F, I: 3  
Worrell, W. H. F, IV: 3  
Wright, Lord. FHM, III: 1

Wright, C. H. C. F, IV: 4  
Wright, F. E. F, II: 1  
Wright, Q. F, III: 2  
Wu, J. C. H. FHM, III: 1  
Wulff, J. F, I: 4  
Wyman, J., Jr. F, II: 3  
Yeomans, H. A. F, III: 2  
Yerkes, R. M. F, IV: 1  
Young, B. L. F, III: 4  
Young, K. F, IV: 3  
Young, O. D. F, III: 4  
Young, R. C. F, I: 3  
Zeleny, J. F, I: 2  
Zimmerman, C. C. F, III: 3  
Zworykin, V. K. F, I: 4

## STATUTES AND STANDING VOTES.

### STATUTES.

*Adopted November 8, 1911: amended May 8, 1912, January 8, and May 14, 1913, April 14, 1915, April 12, 1916, April 10, 1918, May 14, 1919, February 8, April 12, and December 13, 1922, February 14, March 14, and October 10, 1923, March 10, 1926, May 9, 1928, April 8 and November 11, 1931, April 12, 1933, February 14, 1934, December 14, 1938, January 11, April 12, 1939, May 8, 1940, and May 14, 1941.*

#### CHAPTER I.

##### THE CORPORATE SEAL.

ARTICLE 1. The Corporate Seal of the Academy shall be as here depicted:



ARTICLE 2. The Recording Secretary shall have the custody of the Corporate Seal.

*See Chap. v, art. 3; chap. vi, art. 2.*

#### CHAPTER II.

##### FELLOWS AND FOREIGN HONORARY MEMBERS AND DUES.

ARTICLE 1. The Academy consists of Fellows, who are either citizens or residents of

the United States of America, and Foreign Honorary Members. They are arranged in four Classes, according to the Arts and Sciences in which they are severally proficient, and each Class is divided into four Sections, namely:

##### CLASS I. *The Mathematical and Physical Sciences*

- Section 1. Mathematics and Astronomy
- Section 2. Physics
- Section 3. Chemistry
- Section 4. Technology and Engineering

##### CLASS II. *The Natural and Physiological Sciences*

- Section 1. Geology, Mineralogy, and Physics of the Globe
- Section 2. Botany
- Section 3. Zoölogy and Physiology
- Section 4. Medicine and Surgery

##### CLASS III. *The Social Arts*

- Section 1. Jurisprudence
- Section 2. Government, International Law, and Diplomacy
- Section 3. Economics and Sociology
- Section 4. Administration and Affairs

##### CLASS IV. *The Humanities*

- Section 1. Theology, Philosophy, and Psychology
- Section 2. History, Archæology, and Anthropology
- Section 3. Philology
- Section 4. The Fine Arts and Belles Lettres

ARTICLE 2. The number of Fellows shall not exceed Eight hundred, of whom not more than Six hundred shall be residents of Massachusetts, nor shall there be more than Two hundred and twenty in any one Class.

ARTICLE 3. The number of Foreign Honorary Members shall not exceed One hundred and thirty. They shall be chosen from among citizens of foreign countries most eminent for their discoveries and attainments in any of the Classes above enumerated. There shall not be more than Thirty-five in any one Class.

ARTICLE 4. If any person, after being notified of his election as Fellow, shall neglect for six months to accept in writing, or, if a Fellow resident within fifty miles of Boston shall neglect to pay his Admission Fee, his election shall be void; and if any Fellow resident within fifty miles of Boston shall neglect to pay his Annual Dues for six months after they are due, provided his attention shall have been called to this Article of the Statutes in the meantime, he shall cease to be a Fellow; but the Council may suspend the provisions of this Article for a reasonable time.

With the previous consent of the Council, the Treasurer may dispense (*sub silentio*) with the payment of the Admission Fee or of the Annual Dues or both whenever he shall deem it advisable. In the case of officers of the Army or Navy who are out of the Commonwealth on duty, payment of the Annual Dues may be waived during such absence if continued during the whole financial year and if notification of such expected absence be sent to the Treasurer. Upon similar notification to the Treasurer, similar exemption may be accorded to Fellows subject to Annual Dues, who may temporarily remove their residence for at least two years to a place more than fifty miles from Boston.

If any person elected a Foreign Honorary Member shall neglect for six months after being notified of his election to accept in writing, his election shall be void.

See Chap. vii, art. 2.

ARTICLE 5. Every Fellow resident within fifty miles of Boston hereafter elected shall pay an Admission Fee of Ten dollars, unless previously as an Associate he has paid an Admission Fee of like amount.

Every Fellow resident within fifty miles of Boston shall, and others may, pay such Annual Dues, not exceeding Fifteen dollars, as shall be voted by the Academy at each Annual Meeting, when they shall become due; but any Fellow shall be exempt from the annual payment if, at any time after his admission, he shall pay into the treasury Two hundred dollars in addition to his previous payments. Any Fellow shall also be exempt from Annual Dues who has paid such dues for forty years, or, having attained the age of seventy-five has paid dues for twenty-five years.

Fellows residing more than fifty miles from Boston elected after 1938 shall, and other non-resident Fellows may, pay annual dues of five dollars, which shall entitle them to all privileges of resident Fellows.

All Commutations of the Annual Dues shall be and remain permanently funded, the interest only to be used for current expenses.

Any Fellow not previously subject to Annual Dues who takes up his residence within fifty miles of Boston, shall pay to the treasurer within three months thereafter Annual Dues for the current year, failing which his Fellowship shall cease; but the Council may suspend the provisions of this Article for a reasonable time.

Only Fellows who pay Annual Dues or have commuted them may hold office in the Academy or serve on the Standing Committees or vote at meetings.

ARTICLE 6. Fellows who pay or have commuted the Annual Dues and Foreign Honorary Members shall be entitled to receive gratis one copy of all numbers of the Proceedings and Memoirs of the Academy which have been issued after their election.

See Chap. xi, art. 2.

ARTICLE 7. Diplomas signed by the President and the Vice-President of the Class to which the member belongs, and countersigned by the Secretaries, shall be given to Foreign Honorary Members and to Fellows.

ARTICLE 8. If, in the opinion of a majority of the entire Council, any Fellow or Foreign

Honorary Member shall have rendered himself unworthy of a place in the Academy, the Council shall recommend to the Academy the termination of his membership; and if three-fourths of the Fellows present, out of a total attendance of not less than fifty at a Stated Meeting, or at a Special Meeting called for the purpose, shall adopt this recommendation, his name shall be stricken from the Roll.

*See Chap. iii; chap. vi, art. 1; chap. x, art. 1; chap. xi, art. 2.*

### CHAPTER III.

#### ELECTION OF FELLOWS AND FOREIGN HONORARY MEMBERS.

The procedure in the election of Fellows and Foreign Honorary Members shall be as follows:

Nominations to Fellowship or Foreign Honorary Membership in any Section must be signed by two Fellows of that Section, or by three Fellows of any Section, and sent to the Corresponding Secretary accompanied by a statement of the qualifications of the nominee and brief biographical data.

Notice shall be sent to every Fellow not later than the fifteenth of January in each year, reminding him that all nominations must be in the hands of the Corresponding Secretary before the first of February following.

The Corresponding Secretary shall, on the second of February, transmit to the several Vice-Presidents the nominations for Fellows and Foreign Honorary Members in their respective classes. Each Class Committee shall, before the sixteenth of February, consider the nominations, and may add others for the purpose of securing proper membership in the Academy, to the end that those in the country of highest distinction in their several classes may be Fellows.

A list of the nominees, giving a brief account of each, with the names of the nominators, shall be sent to every Fellow with a request that he return the list with such confidential comments and indications of preference as he may choose to make.

All the nominations, with any comments thereon and with expressions of preference on the part of the Fellows, shall be referred to the appropriate Class Committees, which shall canvass them, and report their recommendations in writing to the Council before the Stated Meeting of the Academy in April.

Elections of Fellows and Foreign Honorary Members shall be made by the Council before the Annual Meeting in May, and announced at that meeting.

Persons nominated in any year, but not elected, may be carried over to the list of nominees for the next year at the discretion of the Council, but shall not be further continued unless renominated.

*See Chap. ii; chap. vi, art. 1; chap. x, art. 1.*

### CHAPTER IV.

#### OFFICERS.

ARTICLE 1. The Officers of the Academy shall be a President (who shall be Chairman of the Council), four Vice-Presidents (one from each Class), a Corresponding Secretary (who shall be Secretary of the Council), a Recording Secretary, a Treasurer, a Librarian, and an Editor, all of whom shall be elected by ballot at the Annual Meeting, and shall hold their respective offices for one year, and until others are duly chosen and installed.

There shall be also sixteen Councillors, one from each Section of each Class. At each Annual Meeting four Councillors, one from each Class, shall be elected by ballot to serve for the full term of four years and until others are duly chosen and installed. The same Fellows shall not be eligible for two successive terms.

The Councillors, with the officers previously named, and the Chairmen of the House Committee and the Committee on Resources and Policy, *ex officio*, shall constitute the Council.

*See Chap. xi, art. 1.*

ARTICLE 2. If any officer be unable, through death, absence, or disability, to fulfill the duties of his office, or if he shall resign, his place may be filled by the Council in its



discretion for any part or the whole of the unexpired term.

**ARTICLE 3.** At the Stated Meeting in March, the President shall appoint a Nominating Committee of four Fellows having the right to vote, one from each Class. This Committee shall prepare a list of nominees for the several offices to be filled, and for the Standing Committees, and file it with the Recording Secretary not later than four weeks before the Annual Meeting.

*See Chap. vi, art. 2.*

**ARTICLE 4.** Independent nominations for any office, if signed by at least twenty Fellows having the right to vote, and received by the Recording Secretary not less than ten days before the Annual Meeting, shall be inserted in the call therefor, and shall be mailed to all the Fellows having the right to vote.

*See Chap. vi, art. 2.*

**ARTICLE 5.** The Recording Secretary shall prepare for use in voting at the Annual Meeting a ballot containing the names of all persons duly nominated for office.

## CHAPTER V.

### THE PRESIDENT.

**ARTICLE 1.** The President, or in his absence the senior Vice-President present (seniority to be determined by length of continuous Fellowship in the Academy), shall preside at all meetings of the Academy. In the absence of all these officers, a Chairman of the meeting shall be chosen by ballot.

**ARTICLE 2.** Unless otherwise ordered, all Committees which are not elected by ballot shall be appointed by the presiding officer.

**ARTICLE 3.** Any deed or writing to which the Corporate Seal is to be affixed, except leases of real estate, shall be executed in the name of the Academy by the President or, in the event of his death, absence, or inability, by one of the Vice-Presidents, when thereto duly authorized.

*See Chap. ii, art. 7; chap. iv, art. 1, 3; chap. vi, art. 2; chap. vii, art. 1; chap. x, art. 6; chap. xi, art. 1, 2; chap. xii, art. 1.*

## CHAPTER VI.

### THE SECRETARIES.

**ARTICLE 1.** The Corresponding Secretary shall conduct the correspondence of the Academy and of the Council, recording or making an entry of all letters written in its name, and preserving for the files all official papers which may be received. At each meeting of the Council he shall present the communications addressed to the Academy which have been received since the previous meeting, and at the next meeting of the Academy he shall present such as the Council may determine.

He shall notify all persons who may be elected Fellows or Foreign Honorary Members, send to each a copy of the Statutes, and on their acceptance issue the proper Diploma. He shall also notify all meetings of the Council; and in case of the death, absence, or inability of the Recording Secretary he shall notify all meetings of the Academy.

Under the direction of the Council, he shall keep a List of the Fellows and Foreign Honorary Members, arranged in their several Classes and Sections. It shall be printed annually and issued as of the first day of July.

*See Chap. ii, art. 7; chap. iii; chap. iv, art. 1; chap. x, art. 6; chap. xi, art. 1; chap. xii, art. 1.*

**ARTICLE 2.** The Recording Secretary shall have the custody of the Charter, Corporate Seal, Archives, Statute-Book, Journals, and all literary papers belonging to the Academy.

Fellows borrowing such papers or documents shall receipt for them to their custodian.

The Recording Secretary shall attend the meetings of the Academy and keep a faithful record of the proceedings with the names of the Fellows present; and after each meeting is duly opened, he shall read the record of the preceding meeting.

He shall notify the meetings of the Academy to each Fellow and by mail at least seven days beforehand, and in his discretion may also cause the meetings to be advertised; he shall apprise Officers and Committees of their election or appointment, and inform the Treasurer of appropriations of money voted by the Academy.

After all elections, he shall insert in the Records the names of the Fellows by whom the successful nominees were proposed.

He shall send the Report of the Nominating Committee in print to every Fellow having the right to vote at least three weeks before the Annual Meeting.

*See Chap. iv, art. 3.*

In the absence of the President and of the Vice-President he shall, if present, call the meeting to order, and preside until a Chairman is chosen.

*See Chap. i; chap. ii, art. 7; chap. iv, art. 3, 4, 5; chap. x, art. 6; chap. xi, art. 1, 2; chap. xii, art. 1, 3.*

ARTICLE 3. The Secretaries, with the Editor, shall have authority to publish such of the records of the meetings of the Academy as may seem to them likely to promote its interests.

## CHAPTER VII.

### THE TREASURER AND THE TREASURY.

ARTICLE 1. The Treasurer shall collect all money due or payable to the Academy and all gifts or bequests made to it. He shall pay all bills due and payable by the Academy when approved by the proper officers. He shall sign all leases of real estate in the name of the Academy. He shall be the official custodian of all bonds, stocks and other securities and, with the written approval of any one member of the Committee on Finance, he shall have full authority to sell and transfer, invest and reinvest from time to time in such manner and upon such terms as shall to him seem best, the whole or any part of the personal property of the said Academy.

He shall keep a faithful account of all receipts and expenditures, submit his accounts annually to the Auditing Committee, and render them at the expiration of his term of office, or whenever required to do so by the Academy or the Council.

He shall keep separate accounts of the income of the Rumford Fund, and of all other special Funds, and of the Appropriation thereof, and render them annually.

His accounts shall always be open to the inspection of the Council.

ARTICLE 2. He shall report annually to the Council at its March meeting on the expected income of the various Funds and from all other sources during the ensuing financial year. He shall also report the names of all Fellows who may be then delinquent in the payment of their Annual Dues.

ARTICLE 3. He shall give such security for the trust reposed in him as the Academy may require.

ARTICLE 4. With the approval of a majority of the Committee on Finance, he may appoint an Assistant Treasurer to perform his duties, for whose acts, as such assistant, he shall be responsible; or, with like approval and responsibility, he may employ any Trust Company doing business in Boston as his agent for the same purpose, the compensation of such Assistant Treasurer or agent to be fixed by the Committee on Finance and paid from the Funds of the Academy.

ARTICLE 5. At the Annual Meeting he shall report in print all his official doings for the preceding year, stating the amount and condition of all the property of the Academy entrusted to him, and the character of the investments.

ARTICLE 6. The Financial Year of the Academy shall begin with the first day of April.

ARTICLE 7. No person or committee shall incur any debt or liability in the name of the Academy, unless in accordance with a previous vote and appropriation therefor by the Academy or the Council, or sell or otherwise dispose of any property of the Academy, except cash or invested funds, without previous consent and approval of the Council.

*See Chap. ii, art. 4, 5; chap. vi, art. 2; chap. x, art. 6; chap. xi, art. 1, 2, 3; chap. xii, art. 1.*

## CHAPTER VIII.

### THE LIBRARIAN AND THE LIBRARY.

ARTICLE 1. The Librarian shall have charge of the printed books, keep a correct

catalogue thereof, and provide for their delivery from the Library.

At the Annual Meeting, as Chairman of the Committee on the Library, he shall make a Report on its condition.

ARTICLE 2. In conjunction with the Committee on the Library he shall have authority to expend such sums as may be appropriated by the Academy for the purchase of books, periodicals, etc., and for defraying other necessary expenses connected with the Library.

ARTICLE 3. All books procured from the income of the Rumford Fund or of other special Funds shall contain a book-plate expressing the fact.

ARTICLE 4. Books taken from the Library shall be receipted for to the Librarian or his assistant.

ARTICLE 5. Books shall be returned in good order, regard being had to necessary wear with good usage. If any book shall be lost or injured, the Fellow to whom it stands charged shall replace it by a new volume or by a new set, if it belongs to a set, or pay the current price thereof to the Librarian, whereupon the remainder of the set, if any, shall be delivered to the Fellow so paying, unless such remainder be valuable by reason of association.

ARTICLE 6. All books shall be returned to the Library for examination at least one week before the Annual Meeting.

ARTICLE 7. The Librarian shall have the custody of the Publications of the Academy. With the advice and consent of the President, he may effect exchanges with other associations.

*See Chap. ii, art. 6; chap. xi, art. 1, 2.*

## CHAPTER IX.

### THE EDITOR AND THE PUBLICATIONS.

ARTICLE 1. The Editor shall have charge of the conduct through the press of the Proceedings and the Memoirs, and all corre-

spondence relative thereto, and shall have power to fix the price at which individual numbers of the Proceedings and Memoirs are sold.

The Editor shall select as Associate Editor one member of the Committee of Publication, and the Associate Editor shall assist the Editor in the duties of his office in such way as the two shall find most convenient.

ARTICLE 2. In conjunction with the Committee of Publication, the Editor shall have authority to expend such sums as may be appropriated by the Academy for printing the publications and for defraying other expenses therewith connected.

ARTICLE 3. All publications which are financed in whole or in part from the income of the Rumford Fund or from the income of other special funds, and all publications of work done with the aid of the Rumford Fund or other special funds, shall contain a conspicuous statement of this fact.

ARTICLE 4. Two hundred extra copies of each paper printed in the Proceedings or Memoirs shall be placed at the disposal of the author without charge.

If, on account of the number of communications offered for publication, it shall be necessary to decline for publication communications otherwise acceptable, members of the Academy shall be given preference in each of the several Classes over non-members; but whenever it shall be necessary to exercise this preference, the Editor shall inform the Council of the fact.

*See Chap. iv, art. 1; chap. vi, art. 3; chap. x, art. 6; chap. xi, art. 2, sect. 5.*

## CHAPTER X.

### THE COUNCIL.

ARTICLE 1. The Council shall exercise a discreet supervision over all nominations and elections to membership, and in general supervise all the affairs of the Academy not explicitly reserved to the Academy as a whole

or entrusted by it or by the Statutes to standing or special committees.

It shall consider all nominations duly sent to it by any Class Committee, and act upon them in accordance with the provisions of Chapter III.

With the consent of the Fellow interested, it shall have power to make transfers between the several Sections, reporting its action to the Academy.

See Chap. iii; chap. xi, art. 1.

ARTICLE 2. Nine members shall constitute a quorum.

ARTICLE 3. It shall establish rules and regulations for the transaction of its business, and provide all printed and engraved blanks and books of record.

ARTICLE 4. It shall act upon all resignations of officers, and all resignations and forfeitures of Fellowship; and cause the Statutes to be faithfully executed.

It shall appoint all agents and subordinates not otherwise provided for by the Statutes, prescribe their duties, and fix their compensation. They shall hold their respective positions during the pleasure of the Council.

ARTICLE 5. It may appoint, for terms not exceeding one year, and prescribe the functions of, such committees of its number, or of the Fellows of the Academy, as it may deem expedient, to facilitate the administration of the affairs of the Academy or to promote its interests.

ARTICLE 6. At its March meeting it shall receive reports from the President, the Secretaries, the Treasurer, and the Standing Committees, on the appropriations severally needed for the ensuing financial year. At the same meeting the Treasurer shall report on the expected income of the various Funds and from all other sources during the same year.

A report from the Council shall be submitted to the Academy, for action, at the March meeting, recommending the appropriation which in the opinion of the Council should be made.

On the recommendation of the Council, special appropriations may be made at any Stated Meeting of the Academy, or at a Special Meeting called for the purpose.

See Chap. xi, art. 3.

ARTICLE 7. It shall report at every meeting of the Academy such business as it may deem advisable to present.

See Chap. ii, art. 4, 5, 8; chap. iv, art. 1, 2; chap. vi, art. 1; chap. vii, art. 1; chap. xii, art. 1, 4.

## CHAPTER XI.

### STANDING COMMITTEES.

ARTICLE 1. The Class Committee of each Class shall consist of the Vice-President, who shall be chairman, and the four Councillors of the Class, together with such other officer or officers annually elected as may belong to the Class. It shall consider nominations to Fellowship in its own Class, and report in writing to the Council such as may receive at a Class Committee Meeting a majority of the votes cast, provided at least three shall have been in the affirmative.

See Chap. iii.

ARTICLE 2. At the Annual Meeting the following Standing Committees shall be elected by ballot to serve for the ensuing year.

(i) *The Committee on Finance*, to consist of four Fellows, who shall have general oversight of the funds and investments of the Academy.

See Chap. iv, art. 3; chap. vii, art. 1, 4; chap. x, art. 6.

(ii) *The Committee on Policy and Resources* to consist of five Fellows and the President, *ex officio*, one of the five elected members to be elected each year to serve for a term of five years, except that the five elected in 1939 shall be elected for terms of one, two, three, four, and five years respectively, the Committee to concern itself with procuring funds for the Academy, to study the activities and needs of the Academy, and to recommend, for the approval of the Coun-

oil, means by which the functions and purposes of the Academy may best be fulfilled.

(iii) *The Rumford Committee*, to consist of seven Fellows, who shall report to the Academy on all applications and claims for the Rumford Premium. It alone shall authorize the purchase of books, publications and apparatus at the charge of the income from the Rumford Fund, and generally shall see to the proper execution of the trust.

See Chap. iv, art. 3; chap. x, art. 6.

(iv) *The Cyrus Moors Warren Committee*, to consist of seven Fellows, who shall consider all applications for appropriations from the income of the Cyrus Moors Warren Fund, and generally shall see to the proper execution of the trust.

See Chap. iv, art. 3; chap. x, art. 6.

(v) *The Committee of Publication*, to consist of the Editor, *ex officio*, as Chairman, and four other Fellows, one from each Class, to whom all communications submitted to the Academy for publication shall be referred, and to whom the printing of the Proceedings and the Memoirs shall be entrusted.

It shall fix the price at which volumes of the publications shall be sold, but Fellows may be supplied at half price with volumes and with single publications which they are not entitled to receive gratis.

It shall determine when the pressure of material offered for publication makes it necessary to give preference to members of the Academy as compared with non-members, or to give priority to certain members as compared with others, and to what extent this preference or priority shall be applied in each of the four Classes, to the end that a proper balance of the facilities of publication with respect to subject matter and authors may be maintained.

See Chap. iv, art. 3; chap. vi, art. 1, 3; chap. ix; chap. x, art. 6.

(vi) *The Committee on the Library*, to consist of the Librarian, *ex officio*, as Chairman, and four other Fellows, one from each Class, who shall examine the Library and make an annual report on its condition and management.

See Chap. iv, art. 3; chap. viii, art. 1, 2; chap. x, art. 6.

(vii) *The House Committee*, to consist of four Fellows, who shall have charge of all expenses connected with the House, including the general expenses of the Academy not specifically assigned to the care of other Committees or Officers.

See Chap. iv, art. 1, 3; chap. x, art. 6.

(viii) *The Committee on Meetings*, to consist of the President, the Recording Secretary, and four other Fellows, who shall have charge of plans for meetings of the Academy.

See Chap. iv, art. 3; chap. x, art. 6.

(ix) *The Auditing Committee*, to consist of two Fellows, who shall audit the accounts of the Treasurer, with power to employ an expert and to approve his bill.

See Chap. iv, art. 3; chap. vii, art. 1; chap. x, art. 6.

(x) *The Committee on Biographical Notices*, to consist of six Fellows, two to be elected each year, one of them to be a Secretary of the Academy, to see that biographical records of the Fellows and Foreign Honorary Members are provided.

ARTICLE 3. The Standing Committees shall report annually to the Council in March on the appropriations severally needed for the ensuing financial year; and all bills incurred on account of these Committees, within the limits of the several appropriations made by the Academy, shall be approved by their respective Chairmen.

In the absence of the Chairman of any Committee, bills may be approved by any member of the Committee whom he shall designate for the purpose.

See Chap. vii, art. 1, 7; chap. x, art. 6.



## CHAPTER XII.

MEETINGS, COMMUNICATIONS, AND  
AMENDMENTS.

ARTICLE 1. There shall be annually eight Stated Meetings of the Academy, namely, on the second Wednesday of October, November, December, January, February, March, April, and May. Only at these meetings, or at adjournments thereof regularly notified, or at Special Meetings called for the purpose, shall appropriations of money be made or amendments of the Statutes or Standing Votes be effected.

The Stated Meeting in May shall be the Annual Meeting of the Corporation.

Special Meetings shall be called by either of the Secretaries at the request of the President, of a Vice-President, of the Council, or of ten Fellows having the right to vote; and notifications thereof shall state the purpose for which the meeting is called.

The Council shall have authority, as occasion may demand, to arrange additional meetings and to cancel any of the Statutory meetings, except that meetings for transacting business shall be held as required by the Statutes.

ARTICLE 2. Twenty-five Fellows having the right to vote shall constitute a quorum for the transaction of business at Stated or Special Meetings. Eighteen Fellows shall be sufficient to constitute a meeting for literary or scientific communications and discussions.

ARTICLE 3. Upon the request of the presiding officer or the Recording Secretary, any

motion or resolution offered at any meeting shall be submitted in writing.

ARTICLE 4. No report of any paper presented at a meeting of the Academy shall be published by any Fellow without the consent of the author; and no report shall in any case be published by any Fellow in a newspaper as an account of the proceedings of the Academy without the previous consent and approval of the Council. The Council, in its discretion, by a duly recorded vote, may delegate its authority in this regard to one or more of its members.

ARTICLE 5. Fellows may introduce guests at any of the literary or scientific meetings of the Academy.

ARTICLE 6. The Academy shall not express its judgment on literary or scientific memoirs or performances submitted to it, or included in its Publications.

ARTICLE 7. All proposed Amendments of the Statutes shall be referred to a committee, and on its report, at a subsequent Stated Meeting or at a Special Meeting called for the purpose, two-thirds of the ballots cast, and not less than twenty-five, must be affirmative to effect enactment.

ARTICLE 8. Standing Votes may be passed, amended, or rescinded at a Stated Meeting, or at a Special Meeting called for the purpose, by a vote of two-thirds of the members present. They may be suspended by a unanimous vote.

*See* Chap. ii, art. 5, 8; chap. iii; chap. iv, art. 3, 4, 5; chap. v, art. 1; chap. vi, art. 1, 2; chap. x, art. 7.



## STANDING VOTES

1. Communications of which notice has been given to either of the Secretaries shall take precedence of those not so notified.

2. Fellows may take from the Library six volumes at any one time, and may retain them for three months, and no longer. Upon special application, and for adequate reasons assigned, the Librarian may permit a larger number of volumes, not exceeding twelve, to be drawn from the Library for a limited period.

3. Works published in numbers, when unbound, shall not be taken from the Hall of

the Academy without the leave of the Librarian.

4. Communications offered for publication in the Proceedings or Memoirs of the Academy shall not be accepted for publication before the author either himself or through some agent, shall have informed the Committee on Meetings of his readiness to use such time as the Committee may assign him at such meeting as may be convenient both to him and to the Committee, for the purpose of presenting to the Academy a general statement of the nature and significance of the results contained in his communication.

## RUMFORD PREMIUM

In conformity with the terms of the gift of Sir Benjamin Thompson, Count Rumford, of a certain Fund to the American Academy of Arts and Sciences, and with a decree of the Supreme Judicial Court of Massachusetts for carrying into effect the general charitable intent and purpose of Count Rumford, as expressed in his letter of gift, the Academy is empowered to make from the income of the Rumford Fund, as it now exists, at any Annual Meeting, an award of a gold and a silver medal, being together of the intrinsic value of three hundred dollars, as a Premium to the

author of any important discovery or useful improvement in light or heat, which shall have been made and published by printing, or in any way made known to the public, in any part of the continent of America, or any of the American islands; preference always being given to such discoveries as, in the opinion of the Academy, shall tend most to promote the good of mankind; and, if the Academy sees fit, to add to such medals, as a further Premium for such discovery and improvement, a sum of money not exceeding three hundred dollars.

## PERMANENT SCIENCE FUND

By an Agreement and Declaration of Trust dated Sept. 5, 1928, the BOSTON SAFE DEPOSIT AND TRUST COMPANY agrees to accept and hold gifts made to it as Trustee of the PERMANENT SCIENCE FUND . . . and to pay the income . . . to the AMERICAN ACADEMY OF ARTS AND SCIENCES, to be applied to such scientific research "as shall be deemed charitable within the broadest possible construction of that term" . . . in such sciences as Mathematics, Physics, Chemistry, Astronomy, Geology, Geography, Zoology, Botany, Anthropology, Psychology, Sociology and Economy, History and Philology, Engineering, Medicine and Surgery, Agriculture, Manufacture and

Commerce, Education and any other science of any nature or description whether or not now known or now recognized as scientific; and may be applied to or through public or private associations, societies or institutions, . . . or to or through one or more individuals.

Disbursements from income are voted by the Council of the Academy upon recommendations from the Committee on the Permanent Science Fund. A brochure comprising the First Decennial Report on the history and activities of this committee and a copy of the Agreement and Declaration of Trust is available on request to the Trustee at 100 Franklin Street, Boston, Mass.

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